The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XVII. No. 438 NOVEMBER 19, 1927 Prepaid Annual Subscription: United Kingdom, £1.1.0; Abroad, £1.6.0.

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE *is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.*

Editorial and General Offices: Bouverie House, 154, Fleet Street, London, E.C.4.

Telegrams: "Allangas, Fleet, London." Telephone: City 0244

Improving Chemical Trade

THE good thing about the chemical trade returns for October is the general increase in the volume of exchange—imports, exports, and re-exports. It is an indication of returning confidence, and the effect is cumulative from month to month. With freedom from labour troubles and a general spirit of peace in industry, the prospects of a steady progressive increase are good. The increases over October of 1926 in exports and imports are nearly equal, £214,601 in the one case and £218,155 in the other, while re-exports have risen by £56,200 on 1926 and £34,824 on 1925, indicating a distinct improvement in the general merchanting business.

Taking chemical imports first, there are large increases in acetic acid, borax, and calcium carbide, but bleaching materials are lower. Coal tar products are slightly lower, but there is a marked advance in both crude and distilled glycerine, as well as in nickel oxide. Potassium nitrate has declined, but other potassium compounds have doubled, while sodium compounds are appreciably lower. A big increase in quinine and quinine salts, with a corresponding decrease in cinchona bark, are the features of the drugs section. There are no notable points in dyestuffs imports, beyond an increase in alizarine and natural indigo.

The increase in exports is fairly general. Sulphuric acid, tartaric acid, and ammonium chloride are all up, but the most striking increase is in sulphate of ammonia, which has advanced from £63,236 to £280,400, the improvement being mainly in the exports to Japan and to Spain and the Canaries. There is a satisfactory increase, too, in coal tar products from £47,700 to £139,473. The heavy decline in glycerine from £171,840 to £51,189 is especially notable, when taken in conjunction with the increase in imports. Potassium compounds are virtually unchanged, but there is a fair advance in sodium compounds. Drugs, etc., are down, but dyestuffs have doubled in quantity, though the value has risen only from £49,886 to £70,096, which may be due to reduced prices or to trade in less expensive colours or to both. Painters' colours and materials, though slightly lower, remain a strong section. The increase in re-exports is spread fairly evenly over the whole range of chemical products.

High Pressure Gas Research

FOR some months past there has been a movement to finance and develop on a more permanent basis the research work on gaseous combustion at high pressures continuously carried out since 1920 under the direction of Professor W. A. Bone, F.R.S., in the Department of Chemical Technology of the Imperial College of Science and Technology, London. In view of the special experimental technique developed, and of the highly skilled staff of research assistants engaged upon the work, it has been felt that the College is in a specially favourable, if not unique, position for offering facilities for training selected post-graduate students in high pressure gas research methods and in the design of apparatus and plant in connection therewith, which are matters of growing importance in connection with new developments in chemical industry.

Up to now, the heavy expenses of the researches have been defrayed out of the grants made by the Government Grant Committee of the Royal Society and the Department of Scientific and Industrial Research; but in view of the future new developments now contemplated, it became necessary to have these supplemented from other sources. Accordingly, on hearing of the position, Imperial Chemical Industries, Ltd., generously donated the sum of £3,000 for the provision of further equipment and have promised a further annual subsidy towards the running costs; at the same time, in order to support and expedite fundamental research work on high pressure reactions, the Department of Scientific and Industrial Research has agreed to increase its present grant by an amount sufficient to pay the salaries of the staff of four research assistants plus a mechanical assistant, on condition that the College provides, out of its own resources,

an instructional assistant in connection with the work.

Accordingly, two high pressure gas research laboratories are now being equipped under the scheme, namely: (1) 56 by 35 ft., divided into four sections by steel partitions, for the accommodation of high pressure explosion bomb installations, and two pressure-catalytic tube units with accessories, and (2) 36 by 33 ft., in which means and apparatus for preparing, storing and compressing gases, the determination of compressibilities, the testing and calibration of standard gauges, etc., will be installed. Outside the building is an experimental gas-generator plant and a 3,000 cub. ft. gas-holder for use as required. There are also 100 cub. ft. and numerous 10 cub. ft. gas-holders available for storage purposes. The equipment, when complete, will include, *inter alia*, (*a*) two gas compressors, one working up to 200 and the other up to 1,000 atmospheres pressure; (*b*) a wide range of explosion bombs capable of withstanding explosion pressures of 100, 1,000, 2,000, and 20,000 atmospheres respectively; and (*c*) catalytic-tube units capable of withstanding pressures up to 500 atmospheres at 500° C.

It is expected that most, it not all, of the new equipment will have been installed ready for operation by the end of March next. There will then be room for a limited number of selected post-graduate research students being taken for a systematic training, extending usually over not less than two years, in high pressure gas research methods. The work will be organised and carried out under the personal direction of Professor Bone, who will be assisted in it by Drs. D. M. Newitt and D. T. A. Townend, each of whom will be in charge of two research groups, and Mr. W. E. Stockings, M.Sc., who will be in charge of the gas preparation and compressing arrangements and also act as the instructional assistant. As the number of vacancies for qualified students in connection with the work is limited, we are advised that early application should be made to Professor Bone, at the Imperial College of Science and Technology, London, S.W.7.

Chemical Trade with China

ALTHOUGH full details are still lacking, pending the publication of the Customs returns, there was a substantial increase last year in the principal heavy chemicals imported into China, according to the Report on the Commercial, Industrial, and Economic Situation in China to June 30, 1927, just issued by the Department of Overseas Trade (H.M. Stationery Office, pp. 59, 1s. 6d.). The principal items were sulphate of ammonia, soda ash and caustic soda, bicarbonate and silicate of soda. The first named, in particular, is being used as a fertiliser in steadily-increasing quantities, not only in South China, where it was first introduced some years ago, but also in Central and North China, and the imports in 1926 were more than double those for the previous year. Since the beginning of this year the chemical trade has naturally sustained a severe set-back in the Yangtze valley owing to the disturbed conditions now existing, but on the whole it appears to make steady progress from year to year.

Conditions prevailing in the dyestuff market in China during the past twelve months were even more unfavourable than those ruling in the previous year. The keen competition which has been a feature of the trade for several years past is now concentrated on a total volume of business which has already suffered a noticeable decline, and which continues to decrease still further as the area affected by civil war grows steadily wider. Evidence of this competition, more particularly between American and German manufacturers of artificial indigo, may be found in the fact that in spite of a lower average exchange and increased landing costs local market prices are rather lower than twelve months ago. Imports of artificial indigo in 1926 amounted to 317,481 piculs, as compared with 406,537 in 1925, and during the first six months of this year the trade has been still further reduced by the practical closure of the Yangtze markets. With regard to aniline dyes the import figures for 1926 are only slightly below those for the previous year, but these statistics are not always a very reliable index of the state of trade, as very large stocks are held by importers at Shanghai and other ports on their own account, and the business actually effected has been on a greatly reduced scale, especially during the past few months. As in the case of indigo, competition between German, American, and Continental manufacturers is extremely severe, resulting in a very low price level. The British share of the trade remains small, but appears to be increasing slowly, and a hope is expressed that with the recent amalgamation of important dye and chemical interests in the United Kingdom progress in the future may be more rapid.

A Growing Chemical Industry

THE considerable group of chemical interests—fertiliser makers, lime makers, chemical engineers, and plant manufacturers, as well as chemists themselves—involved in the comparatively new beet sugar industry in this country will be glad to hear of the extension of the business and the successful trading results of the past year. These are shown in the balance sheets for 1926–27, just issued as a White Paper, of the companies manufacturing in Great Britain sugar and molasses from home-grown beet. Of the eleven concerns in operation, nine report profits and two losses. The most remarkable result was achieved by the United Sugar Co., Ltd., whose factory is at Bury St. Edmunds, and whose profit of £153,782 not only wiped out the previous year's debit balance of £63,246, but left a margin of £45,198. The other eight successful companies were the English Beet Sugar Corporation, Ltd. (Cantley Factory), £90,101; the Home Grown Sugar, Ltd. (Kelham Factory), £3,125; The Ely Beet Sugar Factory, Ltd. (Ely Factory), £56,250; the Ipswich Beet Sugar Factory, Ltd. (Ipswich Factory), £50,000; the Anglo-Scottish Beet Sugar Corporation, Ltd. (Colwick and Spalding Factories), £63,119; the West Midland Sugar Co., Ltd. (Kidderminster Factory), £46,359; the Second Anglo-Scottish Beet Sugar Corporation, Ltd. (York (Poppleton), Felstead and Cupar Factories), £17,524; and the Central Sugar Co., Ltd. (Peterborough Factory), £45,420. The two companies reporting losses more than doubled their debit balances during the year. British Sugar

Manufacturers, Ltd. (Wissington Factory), started the year with a loss of £39,040, and added a deficiency of £44,831, making a total debit balance of £83,872. The Orchard Sugar Co., Ltd. (Greenock Factory), lost £46,932 during the past year, which, added to a debit brought forward of £43,028, makes a total loss of £89,960.

"Maison de la Chimie"

THERE has been much talk in chemical circles concerning the attitude of the American Chemical Society towards the proposal to associate the Berthelot centenary celebrations, which have just taken place in France, with the establishment of the "Maison de la Chimie" in Paris as an international centre for the advancement of chemistry. The truth probably is that among chemists of other nations, as well as the United States, the idea of building an international Chemistry House in Paris on the basis of international respect for a brilliant French chemist is not regarded as quite logical or particularly happy. But just as polite guests refrain from exclaiming at the raucous quality of the wine or the non-appetising properties of the food, and considerately endure both with an appearance of deep enjoyment, most of the countries represented at the celebrations have made no demonstration. The American Chemical Society, on the contrary, saw a great principle involved, and decided to take a firm stand on it. Frankly, their position looks logical, and candour is an excellent quality, though at times it may make people feel a little uncomfortable. The American Chemical Society has made it clear that it has naught but good wishes for the "Chemists' Club" of New York, the long-considered "House of Chemistry" of Great Britain, the "Hofmann House" of Berlin, or a national "Maison de la Chimie" to be located in Paris, and would be glad to see any of its members, who are so inclined, contribute to their support. It cannot, however, admit the propriety of any national group assuming the right to centralisation of control of international chemistry within its own territory and sphere of influence, even if the major costs of construction and upkeep of such an institution were not assessed upon the rest of the world. The American Chemical Society does not approve any world centralisation of control of chemistry, and believes that the future progress of chemistry can best be served as heretofore by harmonious co-operation of national organisations. We think the Society's principle quite sound; at the same time we understand the attitude of those who thought much the same but refrained from too bluntly saying so.

Books Received

REPORT ON THE COMMERCIAL, INDUSTRIAL, AND ECONOMIC SITUATION IN CHINA, to June 30, 1927. By H. H. Fox and H. J. Brett, together with A REPORT ON THE TRADE OF SOUTH MANCHURIA. By Oswald White. Department of Overseas Trade. London: H.M. Stationery Office. Pp. 60. 1s. 6d.

A GUIDE TO THE LITERATURE OF CHEMISTRY. By E. J. Crane and A. M. Patterson. London: Chapman and Hall, Ltd. Pp. 438. 25s.

MONEY (Benn's 6d. Library, No. 179). By Hartley Withers. London: Ernest Benn, Ltd. Pp. 80. 6d.

U.S.S.R. (UNION OF SOCIALIST SOVIET REPUBLICS). By Ivy Lee. London: Ernest Benn, Ltd. Pp. 192. 6s.

IN A PERSIAN OIL FIELD. By J. W. Williamson. London: Ernest Benn, Ltd. Pp. 190. 7s. 6d.

The Calendar

Nov. 21	Chemical Industry Club: "A Chemist's View of Evolution." Professor J. C. Drummond. 8 p.m.	2, Whitehall Court, London, S.W.1.
21	British Science Guild: Annual Norman Lockyer Lecture. The Very Rev. Dean Inge.	Goldsmiths' Hall, London.
22 & 23	Society of Glass Technology.	Stourbridge.
22, 29 & Dec. 6, 13	Royal Institution of Great Britain: "A Year's Work in X-Ray Crystal Analysis." Sir William Bragg. 5.15 p.m.	21, Albemarle Street, London.
21, 28 & Dec. 5	Royal Society of Arts (Cantor Lectures): "Alloy Steels, their Manufacture, Properties and Uses." Professor H. C. H. Carpenter. 8 p.m.	John Street, Adelphi, London.
Nov. 23	Faraday Society: A General Discussion on Cohesion and Related Problems.	London.
23	Royal Society of Arts: "Malayan Resins." T. Hedley Barry. 8 p.m.	John Street, Adelphi, London.
24	Chemical Society: "Gaseous Combustion at High Pressures." Professor W. A. Bone. 8 p.m.	Burlington House, Piccadilly, London.
24	Institution of the Rubber Industry (Manchester Section): "Artificial Silk and its Use in the Rubber Trade and Possible Lines of Development." Major A. B. Shearer.	Assembly Rooms, Blackfriars House, Blackfriars Street, Manchester.
24	Society of Chemical Industry (Birmingham and Midland Section): "Notes on the Chemistry and Physics of Stone Decay and Preservation." A. R. Warnes. 6.45 p.m.	Chamber of Commerce Buildings, New Street, Birmingham.
25	University of Birmingham. Chemical Society: Pure Science Dance.	University, Birmingham.
25	Physical Society. 5 p.m.	Imperial College of Science, South Kensington, London.
26	British Association of Chemists: Annual Dinner. 7 p.m.	Hotel Victoria, Northumberland Avenue, London.
28	University of Birmingham Chemical Society: Paper by D. A. Howes.	University, Birmingham.
29	Institute of Metals (Birmingham Section). "Corrosion." Dr. G. D. Bengough. 7 p.m.	Engineers' Club, Waterloo Street, Birmingham.
29	Manchester Athenæum Textile Society: Debate with Athenæum Debating Society on "Combines and Trusts—Are They of Benefit to the Trade or the Public?" 7 p.m.	Athenæum, Manchester.
30	Shaw Textile Guild: "Artificial Silk." G. H. Thompson. 7.30 p.m.	Town Hall, Shaw.
30	Royal Society of Arts: "Marcelin Berthelot and Synthetic Chemistry." Professor H. E. Armstrong. 8 p.m.	John Street, Adelphi, London.
Dec. 2	Society of Chemical Industry (Manchester Section): "Coal and Co-partnership." J. A. Bowie.	Engineers' Club, 17, Albert Square, Manchester.
5	Institution of the Rubber Industry (London Section): "Efficiency Methods in the Rubber Industry." W. W. Hamill.	Engineers' Club, Coventry Street, London.
5	University of Birmingham Chemical Society: "Recent Advances in Stereochemistry." Professor T. M. Lowry.	University, Birmingham.
7	Society of Public Analysts. 8 p.m.	Burlington House, Piccadilly, London.
8,15	Royal Institution of Great Britain: "Petroleum Natural Gases and Their Derivatives." James Kewley. 5.15 p.m.	21, Albemarle Street, London.
9	University of Birmingham Chemical Society: "Chemistry in Relation to Agriculture." Sir John Russell.	University, Birmingham.

Micro-Organisms in Chemical Industry

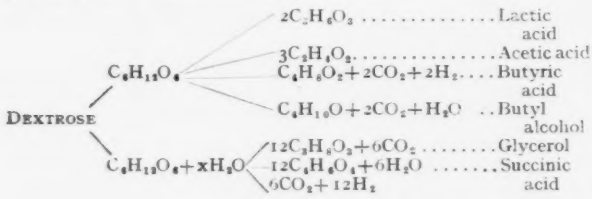
II (b).—Food Preparation and Preservation—(*concluded*)

By G. Malcolm Dyson, Ph.D., A.I.C.

In this, the fourth of this series of articles, Dr. Dyson deals with the production of vinegar, the acetic fermentation, soya bean products, destructive micro-organisms, etc.

THE production of vinegar by spontaneous fermentation of weak alcoholic liquids is, of course, an age-old process, being mentioned, it may be added, in the Book of Proverbs. The starting of fermentation spontaneously by allowing a weak alcoholic fluid to stand exposed to the air is practised only very occasionally in the vinegar manufactories, in which the use of a pure starting culture is preferred, since the presence of certain organisms, especially certain of the mycoderma species, may ruin the whole batch. Where wine is used for the preparation, no preliminary alcoholic fermentation is necessary, but where malt liquors or apple juice are used as the raw material a preliminary fermentation is necessary to convert the sugars into alcohol. The organism used is generally a strain of *Saccharomyces Ellipsoideus*. This yeast, which has ellipsoidal cells, thereby differing from the bread yeast *Saccharomyces Cerevisiæ*, is one of the yeasts which play an important point in the fermenting of grape juice to wine, and was originally isolated from vats of the fermenting juice. The *S. Ellipsoideus* is a fairly active organism, and produces from a given weight of sugar about half that weight of alcohol. It flourishes best at a temperature of 23° to 27° C., and should be added to the malt liquor as a pure culture.

As with all such fermentations, there is considerable risk of the contamination of the contents of the vat with various other micro-organisms during the course of alcoholic fermentation, with the result that part of the carbohydrate matter may be transformed into compounds other than alcohol—a phenomenon which is not only attended with a loss in the strength of the final product, but which is also responsible for a depreciation in the flavour of the vinegar so produced. Without considering each of the possible fermentations in detail, the principal compounds which may be obtained in this way are summarised below:



Undoubtedly the presence of traces of certain of these compounds plays a considerable part in developing the flavour of the vinegar, but the progress of such reactions to any considerable extent is undesirable for three reasons. In the first place, of course, the object of the alcoholic fermentation is to produce alcohol, and side reactions will decrease the strength of the final product; secondly, the *Saccharomyces* will not grow in a medium which is acid; while, thirdly, the development of any considerable quantity of certain of these compounds might easily lead to the development of an "off-flavour." The two chief micro-organisms that are to be feared in this way are the lactic acid bacteria, which contribute a "mousey" smell to the liquid, and the various forms of Mycoderma, which rapidly oxidise the acetic acid to carbon dioxide and water, thus decreasing the strength of the vinegar. Sulphurous acid is the best restraining agent and is commonly used in practice for keeping down the growth of various organisms. The sulphurous acid is practically all destroyed during the fermentation, a fact that is shown by the easy and rapid growth of the acetic bacteria, which are very sensitive to the presence of sulphurous acid even in traces. The latter compound also serves to keep down the growth of any wild yeasts that may accidentally get into the fermentation vats.

The Acetic Fermentation

The acetic fermentation can be conducted by many different organisms, most of which are long and thread-like. *Bacterium aceti* and *Bacteria pasteurianum* are the two most commonly used. The essentials for good vinegar manufacture are, firstly, a pure culture as "starter"; secondly, a sterile (or as nearly sterile as possible) working medium; and, thirdly, an even temperature of 40° to 43° C. It is also necessary to wait until the alcoholic fermentation has finished before the acetic fermentation is started since the *S. Ellipsoideus* are very susceptible to the presence of acetic acid. Furthermore, since the process of acetic fermentation is essentially one of oxidation, a full supply of oxygen must be accorded to the fermenting fluid, and in order to increase the surface of the latter and to accelerate the production of vinegar the "quick" vinegar process was devised. Briefly, the principle of the process is to obtain a heavy growth of the bacteria upon a mass of beechwood shavings and to allow the dilute alcoholic liquid to trickle slowly over this growth. The process is so rapid that with careful regulation the complete change to vinegar can be performed by a passage through a small battery of such generators lasting only a few hours. The process does not yield the highest grade of vinegar, since both acetic acid and other valuable volatile products are lost by volatilisation during generation, with a consequent loss in strength and aroma. The filtered and clarified vinegar is usually pasteurised at 60° to 72° C., a process which not only serves to prevent the continued action of the organisms which it contains, but which has the effect of mellowing the flavour, a process attributed to the acceleration by heat of the combination of the traces of alcohols present to form various esters.

In spite of pasteurisation, vinegar is occasionally subject to contamination. Thus the action of certain Mycoderma and other organisms may continue the fermentation at the expense of the acetic acid content of the vinegar, which is thereby spoiled, and in addition vinegar eels and mites have been known to develop quite frequently in dirty factories where dirty vessels and spillage are allowed to lie about for days at a time. Vinegar eels are small wormlike animals about 1 to 2 mm. long (*Anguillula acti* (Muel.)), and the "mites" are varieties of the Tyroglyptus family.

By-Products as Flavouring Agents

The function of the small traces of by-products in vinegar manufacture as flavouring agents is reflected in the use of certain ripening organisms which are also used to develop flavour in the manufacture of margarine. Margarine made from unripened milk has practically no flavour, the only taste discernible being the bland taste of the hardened fat. The "fresh" flavour of margarine is obtained by the use of one of the lactic acid bacteria. The milk, after collection, is sterilised by heating to 60° to 65° C. for thirty minutes, a process which although it may not remove all the organisms is capable of removing all those that are likely to interfere with the lactid acid organisms. Of the organisms used, the Leichmann strain of *B. Acidi Lactici* produces the most agreeable flavour, the latter being far superior to the somewhat rank flavour produced by *B. Bulgaricus*. The organism *Streptococcus Lacticus* produces a very pleasant flavour, but grows too slowly to be of value in practice. There seems no doubt from the results of small experiments that the ripening of the milk with *B. Acidophilus* would give a very pleasant flavour, but owing to the secrecy in which certain phases of margarine manufacture are shrouded it is not known whether this organism is in use at the present time.

Another acid fermentation which is of interest to the chemist is the formation of citric acid by the fermentation of sugar by suitable organisms. Although at the present time citric acid is obtained almost solely from lemon and lime juice and from pine-apple waste, there is every possibility that the fermentation process might be economically operated. The moulds which produce citric acid from sugar are the various species of Citromyces, some of which will convert as much as 50 per cent. of the sugar in solution to citric acid:—

$$C_6H_{12}O_6+3O=C_6H_8O_7+2H_2O$$

They work best in a 5 per cent. sugar solution, but have the disadvantage of working somewhat slowly, and of occasionally

producing other acids which cannot be easily separated from the citric acid.

In addition to the substances mentioned above in which the action of micro-organisms plays a constructive part, there are several instances in which the organisms are used for purposes of improvement or for certain incidental purposes. Thus, coffee and cocoa are both separated from the husk in which they grow by a process of fermentation. In the case of cocoa, the beans grow in groups of thirty to forty surrounded by a soft shell which begins to ferment almost as soon as gathered. The fruits are gathered and allowed to stand under conditions which make fermentation easy, and the mucus lining of the husk soon rots away leaving the beans, which are easily extracted and scrubbed. Yeasts are mainly responsible for this change, which not only facilitates the removal of the beans but improves their flavour, rounding off the bitter taste and decreasing the theobromine content by facilitating the diffusion of the latter from the cotyledons to the shell.

Soya Bean Products

Another interesting series of examples of this process of maturing is in the manufacture of various fermented articles of dietary from soya beans. These are very extensively used in Japan and the East generally, and although they have been tentatively introduced into America they have not yet attained any measure of popularity, either there or in this country. The meal from the soya bean needs to be fermented before it becomes at all palatable, and goes through an intricate series of processes lasting many months, and in which moulds play an important part. The beans are cooked, mixed with a certain proportion of crushed roasted wheat, and then inoculated with a mould (a species of Aspergillus), which is kept specially inoculated on to starch grains for this purpose. This mould is allowed to grow for three or four days, during which the product becomes covered with a thin layer of greenish-yellow mycelia. The whole is then poured into strong brine, and allowed to ferment over a period lasting from six months to several years, according to the quality of the desired product. The thick brown mash is cleared slightly and the sauce so obtained distributed. It has a pleasant, somewhat meaty flavour, and when evaporated in vacuo gives a thickened extract which resembles the meat and yeast extracts of Western commerce. In addition to this sauce—the "shoyu" of Japan—various other Aspergillus-fermented bean-meal products are used. The "miso" which forms a staple breakfast dish for Japanese children, and which is eaten like the Western porridge, consists of a soya bean mash fermented with *Aspergillus flavus oryzae*. A kind of cheese, "to-fu," is also made by ripening soya bean milk-curd, and mixing it with a red fermented rice. The rice is mould-ripened with the organisms *Monascus purpureus* (Went.).

Destructive Micro-Organisms

Considerable trouble is caused in the various branches of the foodstuffs industry by the action of various micro-organisms which contaminate the products and set up, during transit or storage, injurious fermentations, or which produce poisonous toxins. This difficulty is particularly noticed with canned goods, where the length of time of storage and the confined condition of the goods render the growth of organisms very easy. The usual cause of the trouble is that the spores of bacteria which are very resistant to sterilisation, and thus escape death during "processing," germinate and set up the undesirable fermentations. There are several non-pathogenic organisms which will cause the formation of gas, but the group of organisms which produces the most virulent toxins is the Botulinus group. The *Bacillus Botulinus* or *Clostridium Botulinum* occurs in two types, both of which are comparatively common soil aerobes. It easily forms spores which are extremely resistant to heat, even in the presence of moisture, a fact which renders the complete removal of such spores from process food very difficult, since prolonged exposure to heat has a very bad influence on the quality of the product. In the curve below (Fig. 1), the lengths of time necessary for complete sterilisation are shown at various temperatures.

The *Bacillus Botulinus* is found mainly in vegetable preparations where insufficient care has been taken to remove damaged matter. Its occurrence in meat is comparatively rare, and, in fact, the occurrence of pathogenic organisms in meat in this country is generally of very rare occurrence. An occasional exception to this rule is the appearance of *Bacillus enteritidis* in meat which has been imported into the country in cold storage. This organism shows considerable growth even at the temperatures of cold storage, and since its toxin is not destroyed by baking or boiling, serious symptoms have arisen

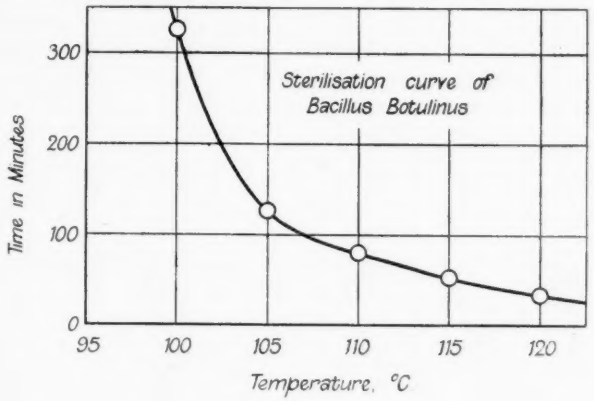


FIG. 1.

where meat infected with *B. enteritidis* before shipment has been consumed.

The precautions which must be taken to avoid the contamination of meat products with dangerous organisms are as a rule precisely those which would be adopted from considerations of cleanliness, namely, the careful selection of animals, the immediate treatment of all animal matter, and the sterilisation of all utensils and premises. A further point which the canner must bear in mind is the fact that heat takes a considerable time to penetrate into the interior of a can of meat, and that the perfect sterilisation of the interior of such a can requires prolonged heating even when a comparatively high temperature is being used.

Nuera Art Silk: Capital Increase Sanctioned

AT a special meeting of the Nuera Art Silk Co., Ltd., held on Thursday, November 10, at the Bleachers' Association Hall, Manchester, it was resolved to increase the capital of the company to £630,000 by the creation of 210,000 shares of £1 each. These will be offered at 27s. 6d. per share to proprietors in the proportion of one new share for every two ordinary or every ten deferred shares now held. Sir James W. Paton, who presided, said the directors had acquired rights in new Lilienfeld patents and the agreement with Messrs. Courtaulds provided for the complete collaboration in scientific and technical developments of this patent. He denied that they had any further agreement with that company. The new capital is required to install the new machinery for the production of Lilienfeld silk on a commercial scale and to provide working capital. The company have bought 43½ acres of land at St. Helens. The new process lends itself especially to the spinning of finer deniers than it has hitherto been possible to produce by the ordinary Viscose process. In reply to a question the chairman said that a statement which had appeared to the effect that Herr Ernst Wagner had been chief engineer of the Nuera Co. was incorrect, because he had never been in the employ of the company.

Formaldehyde in Milk

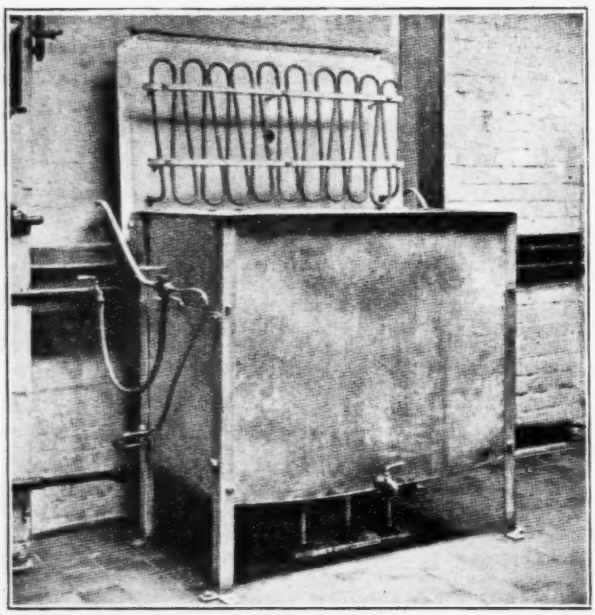
WHAT was stated to be the first prosecution of its kind in Birmingham since 1911 was brought by the Corporation on November 11 against Joseph Billings, milk vendor, who was summoned for selling milk that contained formaldehyde. Mr. Digby Seymour, who prosecuted, stated that analysis showed the milk contained formaldehyde to the extent of two parts per 100,000. This was a considerable quantity, and it was injurious to health. Its effect was such that, although milk might be swarming with bacteria, it would appear perfectly good. Defendant pleaded ignorance of there being any preservative in the milk, which, he said, he purchased from a dealer who got his supplies from a farmer. The Chairman said in the circumstances defendant would be fined 20s. It was a pity he did not get a guarantee of the milk's purity from the supplier. As it was, he was being fined for an offence which he might have escaped and the perpetrator of the adulteration brought to Court instead.

Chemical Industry and the Public Services

A Review of the Public Works Exhibition

The extent to which chemical industry takes its part in the public services of the country was well shown at the Public Works, Roads and Transport Congress and Exhibition held at the Agricultural Hall, Islington, London, this week, and the notes given below show in some measure in what ways industrial chemistry adds to the efficiency of these services.

THE exhibit of Imperial Chemical Industries, Ltd., gave a hint of a universal provider for the public services' specialists. For the highways engineer there was much of interest in the exhibits of silicate of soda P.84, which is specially prepared for hardening and waterproofing concrete. There were on view several samples of blocks prepared only from silicate of



CRAWSHAW'S CHEMICAL COLANDER, OPEN, SHOWING UPPER CONDENSER COILS.

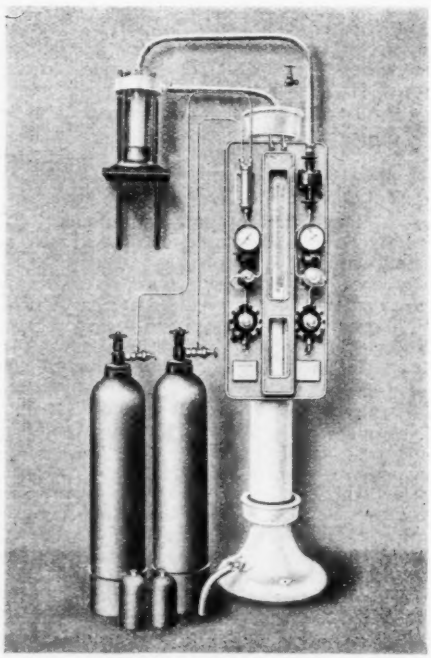
soda and limestone, which bore a resemblance to concrete, and which were stated to have a crushing strength of two tons per square inch. Other uses to which silicate of soda may be put were illustrated by its application to silicate macadam roads, and its use in the prevention of plumbo-solvency and iron corrosion of drinking water mains. In connection with water supply, an arresting feature of the stand was a large laboratory model of a water softening plant using soda ash and hydrated lime for water treatment. Considerable publicity was given also to "Chloros," which, with a carbolic coefficient, by the Rideal-Walker Test, of 20 forms a useful chlorine-containing disinfectant admirably suited for the sterilisation of effluents from sewage works. It is claimed to be extremely effective as a deodorant for sewage in dry seasons, and has a wide range of application as a disinfectant. Sanitary chloride of lime, with a carbolic coefficient of 15, which is specially prepared to give the stability necessary in a disinfectant for public works' use was also included in the exhibit.

There were, besides, what may be called highways accessories such as gas mantles, ranging up to such high intensities as 1,500 candle-power, and plant for the Alumino-Thermic process of welding tramway and railway tracks. In the welding line there were also exhibits of plants for direct or alternating current. Another group in the display was the range of leather cloths, Rexine, Pegamoid and P.V. cloth, which are suitable for use in trams, buses and trains. Protective paints such as "Melanoid" bituminous paint and S.E.G. paint, a durable glossy paint for lamp-posts and safety white lines, illustrated another application of chemical industry to public services. Explosives for commercial use also entered into the display, while much interest was shown by visitors in Crawshaw's chemical colander, an apparatus for the rapid degreasing of metal parts.

This apparatus takes the form of a large tank in which are suspended greasy articles, while in the bottom there is a quantity of easily vaporised degreasing agent. Upon the application of heat the agent, which is known as "Crawshawpol," vaporises and ascends to the suspended articles. The vapour is prevented from escaping from the tank by coming into contact with a condenser coil at the top, when it immediately condenses and falls to the bottom again, at the same time washing the articles free from grease. The apparatus was demonstrated, and several thoroughly greased articles were cleaned even in the interstices in a few seconds.

Water Purification Apparatus

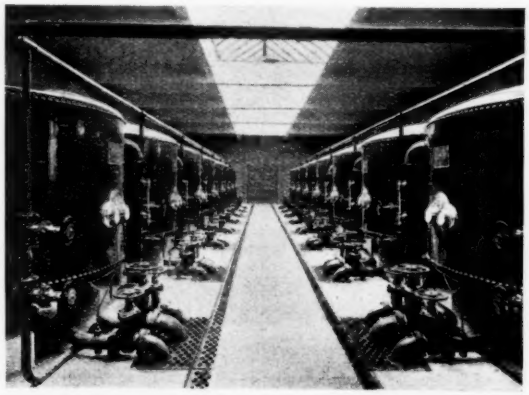
Some further examples of the care with which swimming bath and similar water supplies are sterilised was to be seen at the stand of the Paterson Engineering Co., Ltd., of Windsor House, Kingsway. The company had a number of interesting exhibits, including the latest type of Paterson "Chloronome," specially designed for use in connection with the purification of swimming bath water. This apparatus forms a vital part of the Paterson system of continuous circulating and purification plant. In a number of cases the Chloronome has been installed in connection with existing filtration arrangements to secure a continuously high degree of bacterial purity. Scale models were also included of the standard Pulser Type Chloronome, which is adopted for the sterilisation of water supplies up to about 2,000,000 gallons a day, and the Manometer Chloronome which is used for supplies in excess of this quantity.



PATERSON CHLORONOME—MANOMETER TYPE.

Another attractive model was that of four 8 ft. diameter Paterson pressure filters. This was based on two installations, each of four such filters, which have been in successful operation for the past few years at Malvern, each battery dealing with 500,000 gallons of water per day.

The type of rapid gravity filter adopted by the Metropolitan Water Board and other authorities for the pre-filtration of water supplies before passing on to slow sand beds, was indicated by the model of the Paterson installation of 9,000,000 gallons daily capacity at the Barn Elms Works of the Metropolitan Water Board. The company have under construction



PATERSON PRESSURE FILTERS AT BRADFORD.

at the present time filtration schemes of this type in many parts of the world. In connection with the softening of hard waters, there was shown a model of the by-pass type chemical proportioning gear.

Crushing Machinery

The name of Hadfields, Ltd., is well known to most highway and tramway engineers, and Hadfields' stand illustrated well the care with which the firm has studied the needs of this branch of industry for special steels. A Hecla disc crusher (Symon's Patent), a machine for the production of uniformly cubical " chippings " for the top dressing of roads, was shown in motion, the main wearing parts being of Era manganese steel. The specialities for tramways included a Hadura point, car wheels, tie bars, etc., while there was a big display of hollow and solid steels, springs for motor cars, valves, eccentric shafts, and high speed tool steel.

Analysis Apparatus

On the research side a big range of apparatus was shown by Baird and Tatlock (London), Ltd., who had a special display of apparatus for testing bitumen and tar, and a selection of apparatus required for testing coal and petroleum by-products. The exhibit included viscometers for tars, oils, the lubricating oils, in the Redwood and Engler types, and various types of penetrometers. Flash-point apparatus, both gas and electrically heated, included Abel and Abel-Pensky apparatus for low flashing oils, Pensky-Marten and Gray apparatus for high flashing oils and open flash-point and fire-point apparatus. A range of gas and electric ovens was also shown.

The exhibit of the Cambridge Instrument Co., Ltd., included an interesting group of instruments—vibrographs, accelerometers and stress recorders—employing a novel method of recording, which is capable of great accuracy even when recording movements or vibrations of small amplitude and high frequency.

The Limmer and Trinidad Lake Asphalt Co., Ltd., had on their stand a display of instruments for the estimation of ductility of materials in use in bituminous road construction.

Road Tar, Bitumen, and Emulsions

The variety of tars, bitumens, and road surface emulsions was very numerous. An interesting application of biochemistry to industry is to be seen in the " Amoa " emulsifying liquid. The Amoa Chemical Co. has produced a biochemical agent with which, it is claimed, many materials hitherto thought incapable of permanent emulsification may be emulsified. Among the products which may be treated in this way, and which are produced by the company, are emulsified paraffin wax, emulsified mineral oil, emulsified rubber, and emulsified gas tar, a tar for cold application to roads. The products are claimed to hold up and remain emulsified for any length of time. Another cold tar, " Tarfroid," is made by the coke and by-products department of Dorman, Long and Co., Ltd., the northern licensees of Tarkold, Ltd., of Brentford, now incorporated in the new company, Tarfroid, Ltd. Tarfroid is dehydrated coal tar, in the form of a stable emulsion giving results stated to be directly comparable with those obtained from hot tar. It contains no light spirits, the natural acids of the tar have been neutralised and it may be applied straight from the barrel, setting in about thirty minutes.

Corrosion-Resistant Pipes and Valves

On the stand of the François Cementation Co., Ltd., were exhibited asbestos cement pipes manufactured by Asbestos Cement Pipe, Ltd., which are cheaper and lighter than cast iron, yet which are said to be capable of standing up to the pressures imposed on cast iron. A feature of these pipes is their immunity from encrustation or deterioration through the action of acids or sewer-gas. For use on iron and steel tubes, cement, cement asbestos and cast iron pipes, the Victaulic Co., Ltd., had a display of the Victaulic Joint, in its various types. The Victaulic Joint being flexible under pressure, enables a line to accommodate itself to ground movement, remaining absolutely leaktight.

Miscellaneous Apparatus

Acetylene is much used in modern engineering practice, for use in cutting flames, welding and lighting, and an interesting illustration of its use was found in the equipment shown by Carbic, Ltd., The basis of the system is the Carbic Cake, which is so made as to withstand the ravages of atmospheric moisture. A complete range of generators and welding and cutting plant was shown. Another firm interested in the use of acetylene, Allen-Liversidge, Ltd., showed a full range of oxy-acetylene welding and metal-cutting apparatus.

On Thursday, November 17, a paper on " Rivers' Pollution Prevention " was read to the Congress by Mr. F. H. Hall, and another on " Colloids " was read by Mr. T. P. Francis; papers were also read on the following subjects: " The Solution in Sewage of Oxygen for Diffused Air," by Mr. A. H. Parsons and Mr. H. Wilson; " Some Methods of Analysis of Sewage and Effluents," by Mr. F. R. O'Shaughnessey, assisted by Mr. C. H. Hewitt and Mr. A. S. Miller.

Chemical Problems of Oil Painting

IN his opening lecture to the students of the Royal Academy, London, on Wednesday, Professor A. P. Laurie dealt with some of the fundamental problems which had to be studied by the painter in oils if his picture was to stand the test of time. It was necessary, in the first place, to select pigments which in themselves were permanent, and until recently this was supposed to be all that was essential, but further research had shown that in addition to this it was necessary to make a careful study of the oil medium in which the pigments were ground, as it was found that changes took place in the oil film itself showing an increase in refractive index, which meant that pigments became apparently more translucent and deeper in tone with the passage of time. It was also necessary to pay attention to the yellowing of the oil and the effect it had, more especially on blue and green pigments. It was to be hoped that chemists would ultimately be able to supply a drying oil which did not yellow.

British Purchases of American Chemicals

THE United Kingdom bought nearly one-fifth of the chemical exports of the United States in 1926, states *Commercial Reports*, and her purchases have increased by nearly one-third since 1922. In 1926 the United Kingdom bought from the United States benzol to the value of over $2,000,000; prepared medicines, $3,000,000; rosin and turpentine, $11,360,000; essential oils, 50 per cent. of which consisted of peppermint oil, $400,000; industrial chemicals (largely baking powder, dextrines, disinfectants and insecticides, sodium bichromate, borax), $3,100,000; and miscellaneous chemicals, $1,124,000. In addition, pigments, paints and varnishes were exported from the United States to this country in 1926 to the extent of $3,000,000, one-third of which was represented by carbon black. Last year there was a market for some $500,000 worth of sulphur.

Chemical Trade Returns for October

All-round Increase Over Last Year

THE Board of Trade Returns for October indicate that during the month imports of chemicals, drugs, dyes, and colours amounted in value to £1,397,736, an increase of £218,155 on October, 1926, and of £236,613 on October, 1925; exports during the month were valued at £1,960,690, an increase of £214,601 on 1926, and a decrease of £128,055 on 1925; while re-exports of imported merchandise were valued at £126,186, an increase of £56,200 on 1926 and of £34,824 on 1925. For the 10 months ended October 31, imports were valued at £12,751,001, an increase of £277,895 on 1926, and of £921,416 on 1925; exports were valued at £19,126,689, an increase of £563,962 on 1926, and a decrease of £907,726 on 1925; and re-exports were valued at £879,307, an increase of £40,556 on 1926, and a decrease of £139,065 on 1925.

Imports

	Quantities. Month ended October 31, 1926.	Quantities. Month ended October 31, 1927.	Value. Month ended October 31, 1926. £	Value. Month ended October 31, 1927. £
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Acetic ..... tons	870	1,329	31,626	55,898
Acid Tartaric .....cwt.	2,210	880	10,992	4,081
Bleaching Materials ,,	16,310	16,718	17,634	11,421
Borax..... ,,	1,627	9,180	1,710	7,290
Calcium Carbide... ,,	40,556	79,331	26,921	47,405
Coal Tar Products, not elsewhere specified value	—	—	94,072	85,696
Glycerine, Crude...cwt.	524	1,956	1,709	6,768
Glycerine, Distilled ,,	32	980	132	3,942
Red Lead and Orange Lead.....cwt.	3,357	3,866	6,479	6,123
Nickel Oxide..... ,,	52	377	310	1,760
Potassium Nitrate (Saltpetre) .....cwt.	10,366	8,615	11,449	9,160
Other Potassium Compounds .....cwt.	216,611	411,473	62,394	126,497
Sodium Nitrate ... ,,	113,446	115,088	72,646	66,817
Other Sodium Compounds .....cwt.	85,000	42,502	57,101	25,948
Tartar, Cream of .. ,,	3,962	1,810	12,575	7,607
Zinc Oxide .....tons	857	1,252	29,548	40,674
All Other Sorts... value	—	—	289,010	376,305
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts ..... oz.	94,168	293,995	7,821	19,312
Bark Cinchona ...cwt.	2,247	42	9,182	200
Other Sorts .....value	—	—	131,930	143,928
DYES AND DYESTUFFS, ETC.—				
Intermediate Coal Tar Products .....cwt.	—	133	—	1,576
Alizarine ..... ,,	43	123	2,416	3,585
Indigo, Synthetic . ,,	—	—	—	—
Other Sorts ..... ,,	2,782	2,899	76,029	75,260
Cutch ..... ,,	3,725	3,391	6,454	4,644
Other Dyeing Sorts ,,	1,807	4,570	7,377	14,477
Indigo, Natural ... ,,	—	32	—	921
Extracts for Tanning ,,	73,753	87,664	71,901	92,724
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground, and Blanc Fixe.....cwt.	53,920	57,274	12,791	12,664
White Lead (dry).. ,,	16,017	13,330	30,863	19,146
All Other Sorts.... ,,	78,326	97,464	96,509	125,847
Total of Chemicals, Drugs, Dyes, and Colours .....value	—	—	1,179,581	1,397,736

Exports

CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Sulphuric ...cwt.	2,093	19,128	2,664	4,896
Acid Tartaric ..... ,,	1,330	1,637	7,028	10,712
Ammonium Chloride (Muriate) .....tons	259	389	5,149	8,867
Ammonium Sulphate—				
To France.....tons	—	—	—	—
,, Spain and Canaries tons	503	11,074	5,656	102,851
,, Italy ..... ,,	—	99	—	948
,, Dutch East Indies tons	145	341	1,626	3,356
,, Japan ..... ,,	697	10,753	8,090	104,119
,, British West India Islands and British Guiana tons	151	379	1,752	3,725
,, Other Countries ,,	4,089	6,850	46,112	65,401
Total .... ,,	5,585	29,496	63,236	280,400

Re-exports

	Quantities. Month ended October 31, 1926.	Quantities. Month ended October 31, 1927.	Value. Month ended October 31, 1926. £	Value. Month ended October 31, 1927. £
Bleaching Powder (Chloride of Lime) ..cwt.	40,220	50,167	18,810	21,246
COAL TAR PRODUCTS—				
Anthracene .....cwt.	1,000	—	500	—
Benzol and Toluol galls.	50	345,418	6	18,641
Carbolic Acid ..... cwt.	8,140	13,515	13,928	24,439
Naphtha .....galls.	1,460	14,992	213	859
Naphthalene ..... cwt.	406	1,701	412	1,042
Tar Oil, Creosote Oil, etc. .....galls.	302,080	1,503,699	9,662	56,259
Other Sorts .....cwt.	29,080	68,604	22,979	38,233
Total....value	—	—	47,700	139,473
COPPER, Sulphate of tons	600	438	13,613	10,664
DISINFECTANTS, ETC. cwt.	41,729	39,809	108,427	101,056
Glycerine Crude, ...cwt.	8,521	1,578	32,802	4,471
Glycerine, Distilled .. ,,	30,023	9,711	139,038	46,718
Total .... ,,	38,544	11,289	171,840	51,189
POTASSIUM COMPOUNDS—				
Chromate and Bichromate.....cwt.	2,218	2,119	4,021	3,936
Nitrate (Saltpetre) ,,	2,394	1,272	4,537	2,593
Other Potassium Sorts ..... ,,	1,062	1,140	13,603	16,107
Total .... ,,	5,674	4,531	22,161	22,636
SODIUM COMPOUNDS—				
Carbonate ..... cwt.	318,372	391,885	103,799	114,871
Caustic..... ,,	142,779	161,885	112,064	115,359
Chromate and Bichromate.....cwt.	2,372	3,351	3,615	4,813
Sulphate, including Salt Cake .....cwt.	206,122	263,997	27,311	32,043
All Other Sorts.... ,,	50,910	58,467	63,131	73,354
Total .... ,,	720,555	879,585	309,920	340,440
Zinc Oxide .....tons	90	100	4,076	4,499
All Other Sorts.....value	—	—	286,660	305,632
Total of Chemical Manufactures..value	—	—	1,061,284	1,301,710
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts ..... oz.	234,111	175,696	24,145	19,309
All Other Sorts...value	—	—	278,383	256,239
Total .... ,,	—	—	302,528	275,548
DYES AND DYESTUFFS—				
Products of Coal Tar cwt.	3,708	7,000	42,286	57,825
Other Sorts ..... ,,	7,225	14,966	7,600	12,271
Total.... ,,	10,933	21,966	49,886	70,096
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground, and Blanc Fixe .....cwt.	5,862	1,035	2,376	694
White Lead (dry).. ,,	2,907	4,657	5,768	8,017
Paints and Colours in Paste Form ..cwt.	48,369	44,325	109,320	89,110
Paints and Enamels Prepared (including Ready Mixed)...cwt.	34,631	35,189	104,358	109,182
All Other Sorts.... ,,	52,122	58,514	110,569	106,333
Total.... ,,	143,891	143,720	332,391	313,336
Total of Chemicals, Drugs, Dyes, and Colours .....value	—	—	1,746,089	1,960,690

Re-Exports

	Quantities. Month ended October 31,		Value. Month ended October 31,	
CHEMICAL MANUFACTURES AND PRODUCTS—	1926.	1927.	1926. £	1927. £
Acid Tartaric .....cwt.	56	119	375	899
Borax..... ,,	12	10	15	10
Coal Tar Products.value	—	—	8	394
Glycerine, Crude ..cwt.	100	—	475	—
Glycerine, Distilled ,,	—	—	—	—
Potassium Nitrate (Saltpetre) .....cwt.	38	91	61	146
Sodium Nitrate ... ,,	508	26	319	21
Tartar, Cream of .. ,,	435	385	1,717	1,992
All Other Sorts ...value	—	—	11,714	61,269
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts ..... oz.	15,640	18,840	1,825	1,860
Bark Cinchona, etc. cwt.	465	512	3,634	3,631
All Other Sorts....value	—	—	37,220	39,988
DYES AND DYESTUFFS—				
Cutch .....cwt.	708	1,342	1,118	1,986
All Other Sorts.... ,,	403	118	1,877	1,279
Indigo, Natural ... ,,	1	3	45	84
Extracts for Tanning ,,	1,824	5,986	2,149	7,793
PAINTERS' COLOURS AND MATERIALS— ...cwt.	968	1,396	4,013	4,444
Total of Chemicals, Drugs, Dyes, and Colours .....value	—	—	69,986	126,186

Chemical Matters in Parliament

Sugar Beet

The price for sugar beet was settled by negotiation between the National Farmers' Union and the factory proprietors, and he saw no necessity for introducing legislation to ensure to the farmer a greater share of the beet sugar subsidy now granted to manufacturers, stated Mr. Guinness, in reply to a question by Mr. W. F. Mitchell (House of Commons, November 14). In answer to a question by Lieut.-Commander Kenworthy, he stated that he was aware that proposals for the erection of a beet sugar factory in the watershed of the River Wye had been under consideration. He had no authority to prevent the erection or to control the working of a beet sugar or any other factory. His Ministry had no power of prosecution in the case of pollution.

Superphosphate

In answer to a question by Viscount Sandon (House of Commons, November 14) as to whether any steps were being taken to develop commercially in this country high grade phosphates, Sir B. Chadwick stated that he understood that the grade of superphosphate now being produced in this country was appreciably higher than before the war, and that a still higher grade could be produced if there were any general demand for it.

Rubber Research

Mr. Campbell (House of Commons, November 16) asked leave to introduce a Bill to provide for the collection of a contribution by rubber manufacturers in Great Britain and Northern Ireland to the funds of the Research Association of British Rubber and Tyre Manufacturers. He explained that the Research Association was at present in receipt of a Government grant which would come to an end in 1929, and it was desired to put it on a firm financial basis. Out of a total capital of £50,000,000 no less than £44,000,000 agreed to the Bill. The Bill was limited to five years and to an average contribution of £15,000. Leave was granted, and the Bill was read a first time. It is proposed that authority should be obtained to make a levy of one twenty-fifth of a penny per lb. on all raw rubber retained for use in Great Britain.

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—

84 (*Machinery for Pottery ware and Glazed Tiles*).—"Could you put us in touch with any firms who are manufacturers of machinery suitable for the manufacture of pottery ware and glazed tiles?"

Action of Various Agents on Wool

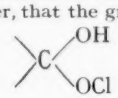
Papers Read at Nottingham

THE Nottingham Section of the Society of Chemical Industry held a meeting jointly with the Midlands Section of the Society of Dyers and Colourists, on Wednesday, November 9, at University College, Nottingham. Papers were given by Mr. S. R. Trotman and Dr. E. R. Trotman.

Dr. Trotman, dealing with the action of chlorine and hypochlorous acid on wool, said that in previous investigations they had been able to show that the action of chlorine on wool was quite different from that of hypochlorous acid. He then described more recent experiments which had been carried out in order to investigate further the difference of behaviour of hypochlorous acid and chlorine. A sample of cross-bred fabric treated (*a*) with hypochlorous acid, and (*b*) with bleaching powder solution mixed with hydrochloric acid and containing 3·5 per cent. chlorine on the weight of wool used, gave on the washed fabric the following percentage nitrogen content:—Original fabric 15.9; after treatment (*a*) 15·8; after treatment (*b*) 15·61; whilst the nitrogen content of the chlorinating liquors expressed as a percentage on the wool fabric used was (*a*) 0·04, (*b*) 0·29. Further experiments showed that chloramines were produced when chlorine acted upon wool, but none were produced by the action of hypochlorous acid.

Reactive Groupings in Wool

This led the authors to look for groups which might react with hypochlorous acid. Carbonyl groups were present in large quantities in the keratin molecule, and a possibility of some kind of reaction between these and hypochlorous acid was considered. Direct combination would give—NHC(OH)(OCl). This compound, however, would tend to become unstable and might either (i) give back the carbonyl group and hypochlorous acid, or (ii) decompose in the following manner:—$NH.C(OH)(OCl) \rightarrow N:COCl + H_2O$. The experiments seemed to show that the latter reaction was the more probable. It was possible, however, that the group



was stable in the wool protein molecule. Dr. Trotman then went on to describe experiments relating to the effect of condensation with semicarbazide, and he showed from the results that hypochlorous acid reacted with the carbonyl groups of the wool protein, while chlorine did not give any reaction. The presence of hydrochloric acid had a profound influence in modifying the course of the reaction between chlorine and the wool substance. The divergence between the two reactions was indicated by observations which showed that both in the presence and absence of sulphuric acid the action of chlorine on the wool substance was to cause a scission of the amino nitrogen, while in the presence of hydrochloric acid the reaction of the chlorine seemed to consist almost entirely of the dissolution of the wool substance as a whole.

Action of Formaldehyde on Wool

Dr. Trotman then gave a short account of the action of formaldehyde on wool. He said the moisture content of air dried paraformaldehyde wool was found to be considerably lower than that for untreated wool. No change occurred in the nitrogen content during treatment with formaldehyde or paraformaldehyde. In the action of dyestuffs formaldehyde had practically no affinity for neutral dyeing acid dyestuffs. When dyed in the presence of acetic acid the affinity for the dyestuffs developed slowly, with sulphuric acid the affinity developed quickly, and the formaldehyde-treated wool became as deeply dyed as the untreated wool. It was evident that the affinity for acid dyestuffs was due to the hydrolysis of the formaldehyde compound. The protection against the action of bacteria was very marked.

NEGOTIATIONS, stated daily press reports during the week, were in progress in Paris between Imperial Chemical Industries, the I.G., and a French chemical group. Possible negotiations with other European countries were also mentioned. Inquiry at I.C.I. elicited the statement that there was no truth in the assertion that an Anglo-Franco-German agreement was about to come into operation. The negotiations between I.C.I. and I.G. were stated to be still in progress.

From Week to Week

MR. C. R. STEVENS, a director of the Sheppey Glue and Chemical Co., has been elected Mayor of Queenborough, Kent.

SIR GEORGE BUCHANAN, of C. S. Meik and Buchanan, consulting engineers, has joined the board of "B. and L." Powdered Fuel, Ltd.

IT IS ANNOUNCED that there is a possibility of the whole of the works of William Oldroyd, Ltd., glue and gelatine manufacturers, being transferred from Leeds to Ditton, near Widnes.

UNIVERSITY NEWS.—*Leeds*: Dr. James Colvin and Mr. R. S. Bradley have been appointed as demonstrators in inorganic chemistry and Dr. J. A. Sugden as research assistant and demonstrator in the Fuel Department.

THE BRITISH MATCH CORPORATION, LTD., held its statutory meeting in London on Wednesday. The chairman, Mr. G. W. Paton, announced that every ordinary shareholder had agreed to exchange his or her shares for those of the Corporation.

BY VIRTUE OF A RECENT order dated October 10 import duty paid on raw materials used in the manufacture of artificial dyestuffs in Poland will be refunded at the rate of 100 zloty per 100 kgs., the order remaining in force six months from October 28.

A DINNER to celebrate the conclusion of the Empire Mining and Metallurgical Congress will be held at the Hotel Victoria, London, on Tuesday, November 22. Applications for seats should be addressed to Mr. C. McDermid, 225, City Road, London, E.C.1.

MR. HAROLD WRIGHT, chief chemist to Dorman, Long and Co., Ltd., gave his presidential address to the Cleveland Institution of Engineers at Middlesbrough on Monday evening, when he dealt with the most efficient means of utilising fuel in the manufacture of iron and steel.

SALES OF NITRATE OF SODA reported by the Nitrate Producers' Association for the fortnight ended October 31 amounted to 84,713 tons for delivery up to June, 1928, while a total of 30,683 tons has also been disposed of for shipment in the period July-December, 1928. Total sales reported since the introduction of free selling are now 2,383,538 tons.

SIR ALFRED MOND will open the First International Exhibition on Light and Heat in Medicine, Surgery, and Hygiene, which will be held at the Central Hall, Westminster, December 13 to 16, inclusive. An important conference will be held in connection with the Exhibition. Among those who will take part are Professor E. C. C. Baly, F.R.S., and Professor I. M. Heilbron.

RECENT WILLS INCLUDE:—Alderman G. E. Wilson, a director of Albright and Wilson, Ltd., chemical manufacturers, of Oldbury, £144,914 (net personalty, £129,545).—Mr. A. J. Tod, of Liverpool, for many years a director of the Liverpool Gas Co., £257,668 (net personalty, £253,378).—Mr. A. L. Milne, formerly secretary of Boots Pure Drug Co., Ltd., and afterwards director of an associated company, £40,081.

A GAS TANK EXPLOSION which occurred in Pittsburg on Monday resulted in 28 deaths, while there are several missing and many injured. The dead include all the thirteen men who were employed making repairs to the tank. The manager of the gas company says that of the two largest tanks one was empty, and the men were inside it making repairs. His theory is that gas leaked in from the full one, the two being connected by pipes, and that this caused the explosion.

THE FIRST ALL-BRITISH INDUSTRIAL SAFETY FILM intended for display to employees in industrial undertakings has just been completed for the National Employers' Mutual General Insurance Association, Ltd., and a private show will be given in the hall of the National Cash Register Co., Ltd., early in December. Employers who are interested in the safeguarding of workers may obtain tickets of admission from the manager of the Accident Prevention Department of the above-mentioned Insurance Association.

THE INSTITUTE OF FUEL will hold its autumn meeting at the Institution of Electrical Engineers, Victoria Embankment, London, on November 23 and 24. Sir Alfred Mond will deliver the presidential address, and the papers read will include: "The British Coking Industry and Some of Its Products," by Mr. R. Ray; "The Chemical Study of Processes Involving the Carbonisation of Coal by Internal Heating," by Professor M. W. Travers; "The Conversion of Coal Into Oil by the Bergius Process," by Messrs. J. I. Graham and D. G. Skinner; "Liquid Fuels Other than Petroleum," by Drs. A. E. Dunstan and H. G. Shatwell, etc.

THE CHILEAN GOVERNMENT states that it will attempt to recover nitrate fields in Northern Chile worth vast sums of money, alleging that they were obtained by foreign capitalists through fraudulent proceedings during the administration of the former President of Chili, Arturo Alessandri, who was recently deported. The Federal Commission alleges that the titles to the land were procured through unscrupulous judges and lawyers, and that since Dr. Alessandri tolerated this, the Federal Nitrate Reserve would probably have been totally lost to the State if the Alessandri administration had not been ended by the revolution.

SIR J. J. THOMSON, F.R.S., Master of Trinity College, Cambridge has been elected an honorary fellow of the Chemical Society of London.

MR. H. A. BRADSTREET, managing director of the Australian company L. and N. Brown Coal, Ltd., has returned to Australia from England.

ARTIFICIAL SILK NEWS.—The Rhodiaseta Art Silk Co., which has been established with a capital of 3,000,000 mks., is erecting a factory at Freiburg for the production of acetate silk.

A REDUCTION IN THE PRICE of boric acid is reported on page 471, and it is stated that permanganate of potash will next week be removed from the list of articles dutiable under the Key Industries' Duty.

THE HARRISON MEMORIAL MEDAL was presented to Mr. F. H. Carr, president of the Society of Chemical Industry, on the occasion of the Harrison Memorial Lecture, at the Pharmaceutical Society, on Tuesday, November 8.

QUARRIES, other than metalliferous and slate quarries, are discussed in preliminary report No. 27 of the Third Census of Production, 1924, which appears in this week's *Board of Trade Journal*. The subjects dealt with include limestone and dolomite, sandstone, lime, sand, China Clay and other clays, etc.

REPORTING TO THE MIDDLESBROUGH SANITARY COMMITTEE on samples of foodstuffs which had been purchased, Mr. T. P. Dixon, the chief inspector, stated that lemon squash had been obtained which contained salicylic acid. When the attention of the manufacturer was called to the fact the liquid was withdrawn from sale.

MR. ROSS C. PURDY, secretary of the American Ceramic Society, in company with Mr. P. G. B. Morriss, sailed recently for Europe, in connection with the ceramists' tour which is being arranged for American ceramists from May 9—July 5, 1928. Mr. Purdy and Mr. Morriss will pay visits to ceramists in England, France, Germany, Italy, Holland, and Czechoslovakia.

DR. C. T. R. WILSON, F.R.S., Jacksonian Professor of Physical Chemistry at the University of Cambridge, has been awarded the Nobel Prize for Physics (1927), jointly with Professor A. H. Compton, of Chicago. Among his best-known researches are those on the method whereby the paths of alpha and other rays are rendered visible by the condensation tracks they leave in moist air.

THE OPENING MEETING OF THE FORTY-EIGHTH SESSION of the Dublin University Experimental Science Association took place at Trinity College, Dublin, on Wednesday, November 9, the occasion being marked by an address by the new president, Dr. James Bell, on "The History of Chemistry in Dublin." Dr. E. A. Werner, professor of organic chemistry in the University, and Professor J. Reilly, the well known historian of Irish chemistry, were also among the speakers.

"COHESION AND RELATED PROBLEMS" will be the subject of a general discussion to be held by the Faraday Society on Wednesday, November 23, at the Chemical Society's rooms, Burlington House, London, at 2.30 p.m. Among the papers will be: "Introductory Paper—Cohesion: a General Survey," by the president, Professor C. H. Desch; "Cohesion in Surface Films," by N. K. Adam; "A Brief Review of a Study of Cohesive and Chemical Attraction," by Professor T. W. Richards, of Harvard. Other papers will include contributions from German and Russian scientists. The meeting will be held in two sessions: 2.30 to 4.45 p.m., and 5.15 to 7.45 p.m.

BEET SUGAR NEWS.—Mr. J. R. C. Stephens, secretary of the Newport (Mon.) Development Association, states that he has followed up negotiations with British Sugar Developments, Ltd., with regard to a site for a beet sugar factory in Newport, but has been informed that a site in another part of the country was now under consideration.—The Carlow (Irish Free State) beet sugar factory has been in operation for one year. It was supplied with 85,588 tons of beet from 9,423 acres and the sugar content averaged 17·3 per cent. The total output of the factory was 12,000 tons of sugar, 1,100 tons of wet pulp, 3,000 tons of dried pulp, 2,500 tons of sugar pulp, and 3,500 tons of treacle. Prospects for the coming season are good and 15,000 acres have been contracted for.

BRITISH CELANESE, LTD., have purchased, for their occupation, a new building, fast nearing completion, which stands on the corner site which was occupied by 22 and 23, Hanover Square and 1 and 3, Brook Street, London, and where was once a house in which lived the Duchess of Brunswick. Erected from designs by Mr. Gordon Jeeves, which were exhibited in the Royal Academy two years ago, the building has an imposing elevation in natural stone, and provides 100,000 sq. ft. of space, as against the 25,000 sq. ft. in the premises it has replaced. Its position, of course, is one of the most important in the West End of London. Among notable interior features will be the entrance to the upper floors, which is to be panelled in old oak, with handsome bronze doors.

Obituary

M. MAURICE PRUDHOMME, who discovered Alizarine Blue in 1877, and also worked on Aniline Black.

MR. WILLIAM ALEXANDER DEWSNAP, a director of Davies and Royle, Ltd., paper agents, on November 15.

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ORGANIC.—The conditions which intervene in the oxidation of organic molecules. G. Fromageot. *J. Chimie Physique*, Vol. 24, No. 8, October 25, pp. 513–544.

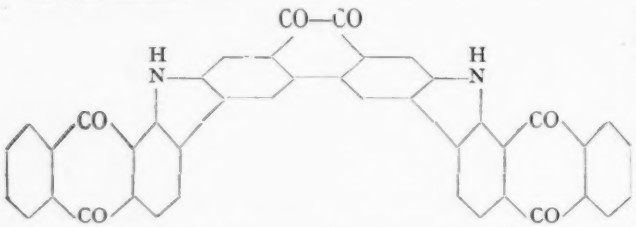
Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

278,771. Vat Dyestuffs of the Anthraquinone Series, Manufacture of. W. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 12, 1926.

It is known that dianthraquinonyl-amines and their derivatives may be treated with various condensing agents to obtain compounds possessing carbazole structure. In this invention vat dyestuffs are obtained by treating a condensation product from a halogen phenanthrenequinone and 1-amino-anthraquinone with aluminium chloride. Thus the dyestuff obtained from one molecule of di-bromo-phenanthrenequinone and two molecules of 1-amino-anthraquinone may be heated with aluminium chloride with or without pyridine to obtain a reddish-brown vat dyestuff. The reaction effects the closing of the carbazole ring and the resulting compound probably has the formula

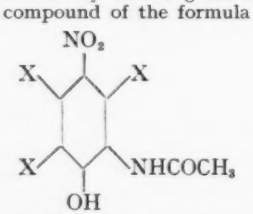


278,777. Organic Compounds, Production of. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, June 10, 1926.

This process relates to the treatment of compounds obtained by the catalytic hydrogenation of oxides of carbon according to specifications Nos. 227,147 (see The Chemical Age, Vol. XII, p. 161), 229,714 (Vol. XII, p. 337), 237,030 (Vol. XIII, p. 201), 238,319 (Vol. XIII, p. 306). These compounds are of a higher order than methanol and consist mainly of saturated alcohols with four or more carbon atoms, unsaturated alcohols, aldehydes, ketones, etc., and are of an oily nature and have an unpleasant smell. In this invention the vapours of these compounds are subjected to catalytic hydrogenation to convert them into colourless oils which have only a very slight smell. The hydrogenation may also be applied to the fractions of this product boiling above 150° C. The hydrogenation is effected between 150° C. and 180° C., which may be below the boiling point of the oil. Catalysts such as nickel, cobalt, copper, or platinum, are suitable, and the oil may be subjected to a preliminary purification by treating with adsorbent silica at 90° C.

278,789. 4-Hydroxy-3-Acetamino-Aryl-1-Arsonic Acids, Process for the Manufacture of. W. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, July 7, 1926.

These acids are obtained by reducing an aryl-1-nitro-3-acetamino-4-hydroxy compound of the formula



in which X represents hydrogen atoms or monovalent substituents, diazotising, and treating with an alkali arsenite according to Bart's method. Examples are given of the production of 1-amino-3-acetylamino-4-phenol and 4-hydroxy-3-acetylamino-phenyl-1-arsonic acid; 5-chloro-1-amino-3-acetamino-4-phenol and 5-chloro-4-hydroxy-3-acetamino-benzene-1-arsonic acid.

278,791. Composite Titanium Pigments, Manufacture of. C. A. Klein, 7, Queen Anne's Grove, Bush Hill Park, Enfield, Middlesex, and R. S. Brown, 36, Manor House, Marylebone Road, London. Application date, July 8, 1926.

Specification No. 243,081 (see The Chemical Age, Vol. XIII, p. 662) describes the process in which a paste of barium sulphate and titanium sulphate is obtained and is poured into boiling water to hydrolyse the titanium sulphate and precipitate it as basic compounds. In this invention, the sulphuric acid liberated by the hydrolysis is utilised by employing instead of boiling water a suspension of barium carbonate in water. A small quantity of hydrochloric acid may be present as a catalyst in order to dissolve the barium carbonate to form barium chloride which is then decomposed by the sulphuric acid. Instead of hydrochloric acid, sodium chloride or barium chloride may be used. The quantity of barium carbonate used should be less than that required to neutralise all the sulphuric acid, to avoid the precipitation of iron.

278,834. Dyes and Dyeing. R. F. Thomson, J. Thomas, and Scottish Dyes, Ltd., Earl's Road, Grangemouth, Stirling, Scotland. Application date, August 4, 1926.

Specifications Nos. 251,313 and 278,112 (see The Chemical Age, Vol. XIV, p. 550, and Vol. XVII, p. 419) describes the alkali fusion of the oxidation compounds of benzanthrone to obtain dibenzanthrone of high purity. In this invention the above product is subjected to halogenation to obtain a product giving reddish-blue shades which are fast to light, washing, and bleaching. Several examples are given of the preparation of substances which are dichlor, trichlor, and tetrachlor derivatives of dibenzanthrone.

278,890. Stable Preparations of Vat Dyestuffs, Process for Producing. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany, K. F. Maennchen, 4, Schlensenstrasse, Hoechst-on-Main, Germany, and F. Hümmerich, 70, Konigsteinerstrasse, Hoechst-on-Main, Germany. Application date, October 21, 1926. Addition to 259,999.

Specification No. 259,999 (see The Chemical Age, Vol. XV, p. 621) describes the addition of a dry powdered alkali-starch preparation to dry vat dyestuff powders, and also a process for obtaining alkali-starch preparations. In this invention the alkali starch preparation is replaced by a mixture of a dry caustic alkali and dry starch. A wetting agent or a dispersing agent and hydrosulphite may be added to the above mixture to obtain a preparation which is ready for use on solution in water. Examples are given of the production of preparations of diparachloranilido-benzoquinone, indigo, thioindigo red powder, etc.

279,003. New Vat Dyestuffs of the Anthraquinone Series. W. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 12, 1926.

It is known that a di-anthraquinonyl-amine on heating with aluminium chloride with or without pyridine and subsequent oxidation is transformed into a compound which may be represented as 1 : 2 : 7 : 8-diphthaloyl carbazole. This reaction takes place more easily if each of the two anthraquinone residues also contains a benzoylamino group.

In this invention, a condensation product obtained from a halogen phenanthrene-quinone and a 1-amino-benzoylamino-anthraquinone is treated with an acid condensing agent such as aluminium chloride, chlorosulphonic acid or sulphuric acid. It is found that treatment with chloro-sulphonic acid or concentrated sulphuric acid alone causes the closing of the carbazole ring in the cold. The compound represents a combination

(*Continued on page* 467.)

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between a phenanthrenequinone and an anthraquinone residue probably according to the formula given in specification 278,771 (see above).

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention:—262,141 (I.G. Farbenindustrie Akt.-Ges.), relating to thiazole derivatives of 1 : 4-naphthoquinone, see Vol. XVI, p. 167; 262,802 (Naamlooze Vennootschap Nederlandsche Mijnbouw en Handelmaatschappij), relating to manufacture of cyanides, see Vol. XVI, p. 189; 268,779 (T. Lichtenberger and L. Kaiser), relating to manufacture of pure white barium and calcium sulphates, see Vol. XVI, p, 559; 270,283 (F. Raschig), relating to chlorthymol (1-methyl-3-oxy-4-isopropyl-6-chlorbenzene), see Vol. XVII, p. 39; 270,626 (Standard Development Co.), relating to purification of hydrocarbon oils containing sulphur, see Vol. XVII, p. 39; 270,644 (Silesia Verein Chemischer Fabriken), relating to vulcanisation acceleration, see Vol. XVII, p. 40; 272,232 (F. Hoffmann-La Roche and Co. Akt.-Ges.), relating to 1 : 3-dioxy-4-carboxy-6-phenyl-alkylbenzene, see Vol. XVII, p. 153; 275,158 (H. Suida), relating to recovery of concentrated acetic acid, see Vol. XVII, p. 311.

International Specifications not yet Accepted

277,371. LAKES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, September 11, 1926.

Organic dyestuffs containing acid salt-forming groups are combined with organic bases such as dicyclo-hexylamine, guanidines, trisubstituted melamines, and diethyl-β-naphthylamine yielding stable salts insoluble in water. The products are soluble in many organic solvents, and may be used for printing. Examples include sodium 1-amino-4-anilido-anthraquinone-2-sulphonate and dicyclo-hexylamine; *p*-nitrophenyl-azosalicylic acid and quinoline; sulphonated diphenyldiaminophenolphthalein and ethenylphenylene-diamine.

277,372. INTERMEDIATE PRODUCTS FOR DYES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, September 11, 1926.

2 : 5 : 6-Trichloro-toluene-4-sulphonic acid is dissolved in sulphuric acid and treated with dilute nitric acid. The nitrosulphonic acid is separated and reduced to obtain 2 : 5 : 6-trichloro-3-aminotoluene-4-sulphonic acid.

277,382. SULPHUR DIOXIDE AND SULPHURIC ACID. R. von Zelewski, 22, Hohenzollernstrasse, Hennef-on-Sieg, Germany. International Convention date, September 13, 1926.

Sulphide ores or other sulphur-containing materials are roasted in Dwight-Lloyd apparatus in a thin layer, and air under pressure is forced through the material from above. The gases enter the Glover tower without cooling.

277,619. RECOVERING SULPHURIC ACID FROM WASTE ACID. C. Still, 4, Bismarckplatz, Recklinghausen, Germany. International Convention date, September 20, 1926.

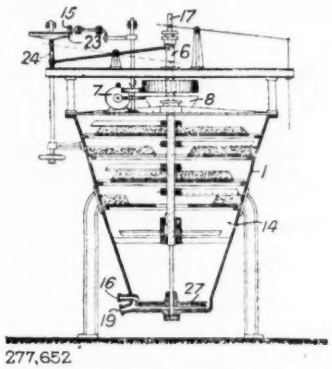
Benzols are purified by treating with concentrated sulphuric acid, and the acid tar is heated with concentrated ammonium sulphate solution. Resins separate out and cool to a hard cake, and residual benzols are vaporised. The liquor is used in an ammonia saturator to obtain ammonium sulphate. The resins may be mixed with coal tar or distilled.

277,628. HYDROGEN PEROXIDE. Oesterreichische Chemische Werke Ges., 5, Technikerstrasse, Vienna. International Convention date, September 16, 1926.

Peroxides, peracids, and persalts are rendered stable and their activity increased after dilution by adding two classes of substances—*e.g.*, two or more of the following:—sodium pyrophosphate, sodium chloride, chlorinated hydrocarbons, or protective colloids, such as Turkey red oil, water glass, soap, etc.

277,652. DRYING AND NEUTRALISING AMMONIUM SALTS. International Cement-Gun Co., Ges., 11, Hedemannstrasse, Verl, Berlin. (Assignees of F. Binswanger, 38A, Zahringerstrasse, Wilmersdorf, Berlin.) International Convention date, September 14, 1926.

Ammonium sulphate is partly dried in a centrifugal apparatus and is fed through a hopper 8 to a chamber 1 where it is moved over superposed plates by rotary scrapers to a rotary discharge plate 27. Hot air is introduced through an opening 14 to pass upwards over the sulphate, and also through an opening 16 to discharge the sulphate through an opening 19. Ammonia may be introduced to neutralise the sulphate. The



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shaft 6 carrying the scrapers is driven by a motor 7, and the scrapers can be gradually lowered by a screw 24, actuated by ratchet mechanism 15, 23. The plate 27 is on an inner shaft 17 which can be engaged with the shaft 6.

277,670. BENZANTHRONE DERIVATIVES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, September 20, 1926.

Alkyl benzanthrones are oxidised in presence of caustic alkali to obtain benzanthrone carboxylic acids. The alkyl group may be in the benzene ring or in the anthraquinone nucleus of the benzanthrone molecule.

277,697. ALUMINA. J. C. Seailles, 280, Boulevard Raspail, Paris. International Convention date, September 18, 1926.

A pulverised non-halogenated aluminium ore is mixed with an alkaline earth base and treated with water in a digester to obtain a hydrated alkaline earth aluminate, and sodium carbonate or sulphate is added to obtain sodium aluminate. Alumina is then obtained by precipitation with carbon dioxide.

277,714–5. CYANIDES, NITRIDES AND CARBON. R. Goldschmidt, 55, Avenue des Arts, Brussels, and S. Coulier, 31, Rue Ernest Laude, Schaerbeek, Belgium. International Convention date, September 20, 1926.

277,714. Peat is mixed with alkali, alkaline earth, or metal compounds, and the paste moulded and dried. The product is carbonised, and then treated at a high temperature with free nitrogen, ammonia, or amines, to obtain cyanides, cyanamides, or nitrides, and a residue of absorbent and decolorising carbon. Nitrogenation catalysts such as iron, manganese, chromium, nickel, cobalt, or their oxides may be present, also substances to increase the activity of the carbon such as zinc chloride or oxide, magnesium phosphate, titanium compounds, etc. The temperature of nitrogenation is 950°–1000° C. and the pressure 1–2 atmospheres.

277,715. A mixture of active carbon and alkali, alkaline earth, or metal compounds is treated with nitrogen or ammonia under the conditions indicated above, to obtain cyanides, nitrides, etc. The mixture may be obtained by the wet or dry carbonisation of wood, spent malt, oil cake, etc., and alkali compounds, which may be effected in the upper part of the nitrogenation furnace.

LATEST NOTIFICATIONS.

280,169. Processes of producing tetra-ethyl lead. Calcott, W. S., Parmelee, A. E., and Lorriman, F. R. November 3, 1926.

280,178. Electrically insulating composition of matter for the construction of partitions and the like. I.G. Farbenindustrie Akt.-Ges. November 6, 1926.

280,184. Process for the production of acetone. Holzverkohlungs-Industrie Akt.-Ges. November 4, 1926.

280,217. Manufacture of dyestuffs of the anthanthrone series. Cassella and Co. Ges., L. November 2, 1926.

280,238. Manufacture of condensation products from urea and an alcohol or a ketone. I.G. Farbenindustrie Akt.-Ges. November 6, 1926.

280,246. Manufacture of synthetic gum or resin. Canadian Electro Products Co., Ltd. November 8, 1926.

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Specifications Accepted with Date of Application

251,303. Nitro-cellulose solutions and plastics, Manufacture and production of. I.G. Farbenindustrie Akt.-Ges. April 24, 1925.

260,604. Alkylnaphthalenes, Manufacture of. I.G. Farbenindustrie Akt.-Ges. October 28, 1925.

260,623. Intermediate products for the dyestuff industry, Manufacture of. Soc. of Chemical Industry in Basle. October 31, 1925.

262,119. 1-diazoanthraquinone 2-carboxylic acids, Manufacture and production of. I.G. Farbenindustrie Akt.-Ges. November 28, 1925.

263,153. Mono-cyclic ketones, having more than nine ring members, and their alkyl derivatives, Process for the preparation of. M. Naef and F. Firmenich. December 15, 1925. Addition to 235,540.

263,192. Substantive dyestuffs of the stilbene series fast to alkalies, Process for the production of. Chemical Works (formerly Sandoz). December 19, 1925.

263,811. Steel, Manufacture of. Kohlswa Jernverks Aktiebolag. December 23, 1925.

267,105. Refining of lead bullion and similar operations, Apparatus for use in. G. K. Williams. March 6, 1926.

271,816. Fluorides containing silicic acid. Process for working-up. Rutgerswerke Akt.-Ges. May 31, 1926.

275,609. Triarylmethane dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. August 9, 1926.

278,735. Cellulose acetate solutions and plastics, Manufacture and production of. I.G. Farbenindustrie Akt.-Ges. April 24, 1925. Addition to 251,303.

279,530. Hydrocyanic acid, Manufacture and production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) June 26, 1926.

279,613. Acid sludge or acid resin obtained from the refining of mineral oils, Treatment of. J. Jubb. (*J. Pickering.*) October 4, 1926.

279,693. Sintering, desulphurising, or removing volatile constituents from ores and metallurgical products, Method of and apparatus for. A. L. Mond. (*Metallbank und Metallurgische Ges.*) February 28, 1927.

279,697. Reduction of zinc ores or other zinc bearing materials. Compagnie des Metaux Overpelt-Lommel. January 26, 1927.

279,710. Phosphorus from phosphorus-containing gases, Process of separating. A. L. Mond. (*I.G. Farbenindustrie Akt.-Ges.*) April 11, 1927.

279,745. Primary propyl ester of 2-phenylquinoline-4-carboxylic acid, Manufacture of. A. J. Stephens (*J. A. von Wulfing.*) June 17, 1927.

Applications for Patents

Allchin, L. J., and Imperial Chemical Industries, Ltd. Dyes, 29,756. November 7.

Arnot, R. Hydrolisation of casein, etc. 30,452. November 12.

Baly, E. C. C., E. J., and Pollopas, Ltd. Manufacture of aldehyde condensation products. 30,259, 30,260. November 11.

Brandwood, J. Dyeing artificial silk threads, etc. 30,002. November 9.

British Dyestuffs Corporation, Ltd. Means of thermal decomposition of substances. 29,757. November 7.

British Dyestuffs Corporation, Ltd. Manufacture of phenolic resins. 30,225. November 10.

Canadian Electro Products Co., Ltd. Manufacture of synthetic gum or resin. 29,843. November 8. (United States, November 8, 1926.)

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Decomposition of chromium ore, etc. 30,242. November 10.

Cassella and Co. Ges., L. Manufacture of anthanthrone dyestuffs. 30,241. November 10. (November 3, 1926.)

Chemical Works formerly Sandoz. Manufacture of chemotherapeutical compositions. 29,927. November 8. (Switzerland, January 15.)

Chemical Works formerly Sandoz. Preparation of bile acid salts of cinchona alkaloids. 29,928. November 8. (Switzerland, December 17, 1926.)

Compagnie Nationale de Matières Colorantes et Manufactures de Produits Chimiques du Nord Réunies Etablissements Kuhlmann. Manufacture of halogenated organic compounds. 30,354. November 11. (France, July 23.)

Croad, A. K., and Pyridium Corporation. Preparing water-soluble azo dyes. 30,170. November 10.

Crompton, A. Dyeing cloth. 30,442. November 12.

Cuénoud, J. Filters for liquids. 29,950. November 8.

Dickinson, Ltd., A. J. Manufacture of insecticides. 30,215. November 10.

Empson, A. W. Centrifugal separators. 29,888. November 8.

Fells, H. A., and Firth, J. B. Manufacture of adsorbents. 29,895. November 8.

Firth, J. B. Chlorinating organic materials. 30,258. November 11.

Hadfield, Sir R. A. Heat treatment of steel. 29,916. November 8.

Hall, A. J., and Silver Springs Bleaching and Dyeing Co. Production and colouring of textile yarns, etc. 29,872. November 8.

Hellriegel, E., and Traube, W. Process of producing *N*-monoalkyl derivatives of the aminophenols. 30,025. November 9. (Germany, November 15, 1926.)

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of anhydrous metallic chlorides. 29,739. November 7.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Recovery of oxidation products of solid hydrocarbons. 29,741. November 7.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of thiourea. 30,046. November 9.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Recovery of metals, etc., soluble in ammoniacal liquors. 29,743. November 7.

I.G. Farbenindustrie Akt.-Ges. Manufacture of condensation products from urea. 29,764. November 7. (Germany November 6, 1926.)

I.G. Farbenindustrie Akt.-Ges. Roll films. 29,914. November 8. (Germany, December 10, 1926.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of hydrogenated naphthostyrils. 30,058. November 9. (Germany, November 25, 1926.)

Imperial Chemical Industries, Ltd., and Jenkins, W. J. Cellulose ester solutions. 29,938. November 8.

Imperial Chemical Industries, Ltd., and Jenkins, W. J. Nitrocellulose products. 30,206. November 10.

Imperial Chemical Industries, Ltd., and Walker, E. E. Manufacture of artificial resins. 30,349. November 11.

Kissock, A. Production of molybdates. 29,790. November 7. (United States, November 6, 1926.)

Lander, C. H., and Shaw, J. F. Low-temperature carbonisation of bituminous coals, etc. 30,365. November 11.

Laughlin Filter Corporation. Centrifugal separators. 29,967. November 8. (United States, January 20.)

Merck, E. [Firm of] Merck, F., K., L., and W. Manufacture of arylaminoalkyl carbinols. 30,229. November 10. (Germany, November 10, 1926.)

Ramsay, D. M. Distillation of carbonaceous material. 30,275. November 11.

Rossi, O. Apparatus for vaporising heavy liquid hydrocarbons. 29,885. November 8.

Schaub, J. J. Production of nitrocellulose. 30,437. November 12.

Scott, A. C. Prevention of caking of crystals, etc. 30,374. November 11.

Scott, A. C. Explosives. 30,375. November 11.

Selden Co. Catalytic oxidation of organic compounds. 30,327. November 11. (United States, June 3.)

Smith, S. C. Recovery of ammonia from coal gas, etc. 29,913. November 8.

Smith, S. C. Treatment of metalliferous materials. 30,059. November 9.

Smith, S. C. Manufacture of lead carbonate. 30,060. November 9.

Stafford, N. Manufacture of phenolic resins. 30,225. November 10.

Towlson, B. E. Chlorinating organic materials. 30,258. November 11.

Chemical Co.'s Liquidation

In the liquidation of the Mersey Chemical Works, Ltd., Alderman's House, Alderman's Walk, London, E.C., which was effected under the Trading With the Enemy Amendment Acts, Mr. H. E. Burgess, senior official receiver and liquidator, has given notice that he is applying to the Board of Trade for his release. A statement of the company's affairs in May, 1919, disclosed liabilities of £3,029, an estimated surplus of £173,455 with regard to the creditors, and of £55,955 with reference to the shareholders. The receipts actually amounted to £260,349, enabling a dividend of 20s. in the £ to be paid to four unsecured creditors with claims amounting in all to £14,002. A preferential claim of £1,831 was also paid in full. Other payments totalled £20,718 and £225,629 was distributed among the ten shareholders, being a fraction over £9 12s. per share. The capital issued and allotted was 23,500 ordinary shares of £5 each. The official receiver further reports that the Winding-up Order was made on December 5, 1918 upon a petition presented to the Court by the Board of Trade under Section 1 (7) of the Trading with the Enemy Amendment Act, 1916, following upon a winding up of the company's business by a controller appointed on March 9, 1917, under the provisions of such Act.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages extra.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 5d. to 2s. 10d. per gall.; pyridinised industrial, 2s. 7d. to 3s. per gall.; mineralised, 3s. 6d. to 3s. 10d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2½d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7½d. to 8d. per lb. Crude 60's, 2s. 3d. to 2s. 5d. per gall.

ACID CRESYLIC 99/100.—2s. 11d. to 3s. per gall. 97/99.—2s. 4½d. to 2s. 8d. per gall. Pale, 95%, 2s. 3d. to 2s. 6d. per gall. Dark, 95%, 2s. 1d. to 2s. 3d.

ANTHRACENE.—A quality, 2½d. per unit. 40%, £5 per ton.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.

BENZOLE.—Crude 65's, 9¼d. to 9¾d. per gall., ex works in tank wagons. Standard Motor, 1s. 1½d. to 1s. 2½d. per gall., ex works in tank wagons. Pure, 1s. 5d. to 1s. 6d. per gall., ex works in tank wagons.

TOLUOLE.—90%, 1s. 4d. to 1s. 8d. per gall. Firm. Pure, 1s. 6d. to 2s. per gall.

XYLOL.—1s. 3d. to 1s. 10d. per gall. Pure, 1s. 9d. per gall.

CREOSOTE.—Cresylic, 20/24%, 10d. to 11d. per gall.; middle oil, 8d. to 9d. per gall. Heavy, 8¾d. to 9d. per gall. Standard specification, 7¼d. to 7½d. ex works. Salty, 7d. per gall. less 1½%.

NAPHTHA.—Crude, 9d. to 10d. per gall. Solvent 90/160, 9½d. to 10d. per gall. Solvent 95/160, 1s. 3d. to 1s. 4d. per gall. Solvent 90/190, 9½d. to 1s. 3d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed or hot pressed, £8 per ton.

NAPHTHALENE.—Crystals, £11 10s. to £13 10s. per ton. Quiet. Flaked, £12 10s. to £13 per ton, according to districts.

PITCH.—Medium soft, 85s. to 87s. 6d. per ton, f.o.b., according to district. Market firm.

PYRIDINE.—90/140, 5s. 9d. to 6s. 6d. per gall. 90/180, 4s. 6d. to 5s. per gall. Heavy, 4s. to 4s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5½d. per lb.

m-CRESOL 98/100%.—2s. 7½d. per lb. Only limited inquiry.

p-CRESOL 32/34° C.—2s. 8½d. per lb. Only limited inquiry.

DICHLORANILINE.—1s. 10d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 7d. to 1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—7½d. per lb.

p-TOLUIDINE.—2s. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

N. W. Acid.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 10s. to £10 per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.

CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.

IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.

WOOD TAR.—£4 to £5 per ton.

BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¾d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPHONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.

ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 5d. per lb.

ACID, BENZOIC B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. to 1s. 3d. per oz., according to quantity.

Acid, Boric B.P.—Crystal, 36s. to 37s. per cwt.; powder, 40s. to 41s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
Acid, Camphoric.—19s. to 21s. per lb.
Acid, Citric.—1s. 7½d. to 1s. 10d. per lb., less 5%.
Acid, Gallic.—2s. 8d. per lb. for pure crystal, in cwt. lots.
Acid, Pyrogallic, Crystals.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.
Acid, Salicylic, B.P. pulv.—1s. 4d. to 1s. 6d. per lb.; Technical.—11½d. to 1s. per lb. Good demand.
Acid, Tannic B.P.—2s. 8d. to 2s. 10d. per lb.
Acid, Tartaric.—1s. 3¼d. per lb., less 5%.
Amidol.—9s. per lb., d/d.
Acetanilide.—1s. 11d. per lb. for quantities.
Amidopyrin.—8s. 6d. per lb.
Ammonium Benzoate.—3s. 3d. to 3s. 6d. per lb., according to quantity.
Ammonium Carbonate B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated: 1s. per lb.
Atropine Sulphate.—9s. 6d. per oz.
Barbitone.—5s. 9d. to 6s. per lb.
Benzonaphthol.—3s. 3d. per lb. spot.
Bismuth Carbonate.—10s. 4d. to 10s. 7d. per lb.
Bismuth Citrate.—9s. 10d. to 10s. 1d. per lb.
Bismuth Salicylate.—8s. 10d. to 10s. 1d. per lb.
Bismuth Subnitrate.—8s. 4d. to 8s. 7d. per lb.
Bismuth Nitrate.—6s. 1d. to 6s. 4d. per lb.
Bismuth Oxide.—13s. 10d. to 14s. 1d. per lb.
Bismuth Subchloride.—13s. 10d. to 14s. 1d. per lb.
Bismuth Subgallate.—8s. 1d. to 8s. 4d. per lb. Extra and reduced prices for smaller and larger quantities respectively; Liquor Bismuthi B.P. in W. Qts. 1s. 1d. per lb.; 12 W. Qts. 1s. per lb.; 36 W. Qts. 11½d. per lb.
Borax B.P.—Crystal, 25s. per cwt.; powder, 26s. percwt. according to quantity. Carriage paid any station in Great Britain, in ton lots.
Bromides.—Potassium, 1s. 10½d. per lb.; sodium, 2s. 1d. per lb.; ammonium, 2s. 3d. per lb.; granulated, ¼d. per lb. less; all spot. Large quantities at lower rates.
Calcium Lactate.—1s. 4d. to 1s. 5d. per lb.
Camphor.—Refined flowers, 2s. 11d. to 3s. 1d. per lb., according to quantity; also special contract prices.
Chloral Hydrate.—3s. 2d. to 3s. 4d. per lb.
Chloroform.—2s. 3d. to 2s. 7½d. per lb., according to quantity.
Creosote Carbonate.—6s. per lb.
Ethers.—S.G. ·730—1s. 1½d. to 10½d., drums; other gravities at proportionate prices.
Formaldehyde.—£39 per ton, in barrels ex wharf.
Guaiacol Carbonate.—4s. 9d. to 5s. per lb.
Hexamine.—2s. 3d. to 2s. 6d. per lb.
Homatropine Hydrobromide.—30s. per oz.
Hydrastine Hydrochloride.—English make offered at 120s. per oz.
Hydrogen Peroxide (12 vols.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gal. B.P., 10 vols., 2s. 3d. per gal. In carboys. Winchesters, 2s. 11d. to 3s. 9d. per gal.; 20 vols., 4s. 3d. per gal.; Winchesters, 5s. per gal. Special prices for larger quantities.
Hydroquinone.—2s. 11d. to 3s. 2d. per lb., in cwt. lots.
Hypophosphites.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
Iron Ammonium Citrate.—B.P., 2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.
Iron Perchloride.—18s. to 22s. per cwt., according to quantity.
Magnesium Carbonate.—Light commercial, £31 per ton net.
Magnesium Oxide.—Light commercial, £62 10s. per ton, less 2½%; Heavy Commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.
Menthol.—A.B.R. recrystallised B.P., 17s. 9d. per lb. net; Synthetic detached crystals, 9s. to 12s. 6d. per lb., according to quantity; Liquid (95%), 11s. 3d. per lb.
Mercurials B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10d. to 5s. 11d. per lb. Special prices for larger quantities.
Methyl Salicylate.—1s. 9d. per lb.
Methyl Sulphonal.—8s. 9d. to 9s. per lb.
Metol.—11s. per lb. British make.
Paraformaldehyde.—1s. 9d. per lb. for 100% powder.
Paraldehyde.—1s. 4d. per lb.
Phenacetin.—2s. 6d. to 2s. 9d. per lb.
Phenazone.—4s. to 4s. 3d. per lb.
Phenolphthalein.—6s. 6d. to 6s. 9d. per lb.
Potassium Bitartrate 99/100% (Cream of Tartar).—98s. per cwt. less 2½%.
Potassium Citrate.—B.P.C., 1911: 1s. 8d. to 1s. 11d. per lb.; U.S.P.: 1s. 11d. to 2s. 2d. per lb.
Potassium Ferricyanide.—1s. 9d. per lb., in cwt. lots.
Potassium Iodide.—16s. 8d. to 17s. 2d. per lb. according to quantit
Potassium Metabisulphite.—6d. per lb., 1-cwt. kegs include f.o.r. London.
Potassium Permanganate.—B.P. crystals, 6d. per lb., spot.
Quinine Sulphate.—1s. 8d. to 1s. 9d. per oz. bulk in 100 oz. tins.
Resorcin.—3s. 9d. to 4s. per lb., spot.
Saccharin.—55s. per lb.; in quantity lower.
Salol.—2s. 4d. per lb.
Sodium Benzoate, B.P.—1s. 8d. to 1s. 11d. per lb.
Sodium Citrate, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923—1s. 11d. to 2s. 1d. per lb. for 1-cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.
Sodium Ferrocyanide.—4d. per lb., carriage paid.
Sodium Hyposulphite, Photographic.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.
Sodium Nitroprusside.—16s. per lb.
Sodium Potassium Tartrate (Rochelle Salt).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.
Sodium Salicylate.—Powder, 1s. 7½d. to 1s. 9d. per lb. Crystal, 1s. 8½d. to 1s. 10d. per lb.
Sodium Sulphide, pure recrystallised.—10d. to 1s. 2d. per lb.
Sodium Sulphite, anhydrous.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.
Sulphonal.—6s. 9d. to 7s. per lb.
Tartar Emetic, B.P.—Crystal or powder, 2s. 1d. to 2s. 2d. per lb.
Thymol.—Puriss., 10s. to 10s. 3d. per lb., according to quantity. Firmer. Natural, 14s. 3d. per lb.

Perfumery Chemicals

Acetophenone.—7s. per lb.
Aubepine (ex Anethol).—11s. per lb.
Amyl Acetate.—2s. per lb.
Amyl Butyrate.—5s. 3d. per lb.
Amyl Salicylate.—3s. per lb.
Anethol (M.P. 21/22° C.).—5s. 6d. per lb.
Benzyl Acetate from Chlorine-free Benzyl Alcohol.—2s. per lb
Benzyl Alcohol free from Chlorine.—2s. per lb per lb.
Benzaldehyde free from Chlorine.—2s. 6d. per lb.
Benzyl Benzoate.—2s. 6d. per lb.
Cinnamic Aldehyde Natural.—16s. 6d. per lb.
Coumarin.—10s. per lb.
Citronellol.—13s. 9d. per lb.
Citral.—8s. 3d. per lb.
Ethyl Cinnamate.—6s. per lb.
Ethyl Phthalate.—3s. per lb.
Eugenol.—8s. 6d. per lb.
Geraniol (Palmarosa).—18s. 6d. per lb.
Geraniol.—6s. 6d. to 10s. per lb.
Heliotropine.—4s. 9d. per lb.
Iso Eugenol.—13s. 6d. per lb.
Linalool.—Ex Bois de Rose, 14s. per lb. Ex Shui Oil, 9s. 9d. per lb.
Linalyl Acetate.—Ex Bois de Rose, 17s. 6d. per lb. Ex Shui Oil, 13s. 9d. per lb.
Methyl Anthranilate.—8s. 6d. per lb.
Methyl Benzoate.—4s. per lb.
Musk Ketone.—35s. per lb.
Musk Xylol.—8s. per lb.
Nerolin.—4s. 6d. per lb.
Phenyl Ethyl Acetate.—12s. per lb.
Phenyl Ethyl Alcohol.—10s. 6d. per lb.
Rhodinol.—32s. 6d. per lb.
Safrol.—1s. 6d. per lb.
Terpineol.—1s. 8d. per lb.
Vanillin.—16s. 6d. per lb.

Essential Oils

Almond Oil.—Foreign S.P.A., 11s. per lb.
Anise Oil.—2s. 9d. per lb.
Bergamot Oil.—26s. per lb.
Bourbon Geranium Oil.—13s. 6d. per lb.
Camphor Oil.—9d. per lb.
Cananga Oil, Java.—15s. 9d. per lb.
Cinnamon Oil Leaf.—6d. per oz.
Cassia Oil, 80/85%.—7s. 3d. per lb.
Citronella Oil.—Java, 1s. 10d. per lb., c.i.f. U.K. port for shipment over 1928. Ceylon, pure, 1s. 8d. per lb.
Clove Oil.—5s. per lb.
Eucalyptus Oil, Australian.—2s. 2d. per lb.
Lavender Oil.—Mont Blanc, 38/40%, Esters, 17s. per lb.
Lemon Oil.—7s. 3d. per lb.
Lemongrass Oil.—4s. 6d. per lb.
Orange Oil, Sweet.—11s. 3d. per lb.
Otto of Rose Oil.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.
Palma Rosa Oil.—10s. per lb.
Peppermint Oil.—Wayne County, 15s. 9d. per lb.; Japanese, 8s. per lb.
Petitgrain Oil.—8s. per lb.
Sandalwood Oil.—Mysore, 26s. 6d. per lb.; 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, November 17, 1927.

THE chemical trade has continued the activity noted in our last issue, and demand still continues to be brisk. Prices on the whole are very firm, with an upward tendency. Export trade has been fair.

General Chemicals

ACETONE.—The price is maintained at £63 per ton, with a slight reduction for large quantities.

ACID ACETIC is unchanged at £37 to £38 per ton for 80%. Export trade is better.

ACID BORIC.—The producers intimate a reduction of £4 per ton, making the commercial quality now £30 per ton, with the usual difference for powder and other qualities.

ACID FORMIC has been in good demand and price is firm at £44 to £45 per ton.

ACID LACTIC.—Unchanged at £43 per ton. Demand improving.

ACID OXALIC continues very firm, and there is a good demand at £30 per ton.

ALUMINA SULPHATE.—The market is maintained at the advanced level, and price continues firm at £5 15s. per ton with upward tendency.

AMMONIUM CHLORIDE is unchanged at £19 per ton, demand fair.

BARIUM CHLORIDE is quite active, and price is quoted at from £8 10s. to £9 per ton.

COPPER SULPHATE has been in active request, and price is inclined to be higher at £23 5s. to £23 10s. per ton. Inquiry is very strong for the forward position.

EPSOM SALTS.—In good demand at £4 7s. 6d. per ton.

FORMALDEHYDE continues active, and price is firm at £41 10s. per ton.

LEAD ACETATE.—Unchanged at £43 10s. for white, with brown 10s. per ton less.

LEAD NITRATE is firmer and in good request at £39 10s. to £40 per ton.

LIME ACETATE is unchanged.

METHYL ACETONE is active at £54 to £55 per ton, with supplies inclined to be on the light side.

POTASSIUM CHLORATE continues firm and in short supply.

POTASSIUM PERMANGANATE is weak, and price is round about 6¼d. per lb. for B.P. It is understood that this product will come off the list of dutiable articles under the K.I.D. next week.

POTASSIUM PRUSSIATE continues in fair demand at £59 per ton for bulk quantities.

SODIUM ACETATE is in short supply, and price is very firm at £19 10s. to £20 5s. per ton, according to quantity.

SODIUM BICHROMATE is unchanged at 3¼d. per lb.

SODIUM CHLORATE.—The advance in this market is maintained with the quotation at £26 to £28 per ton, with a good demand.

SODIUM NITRATE is inclined to go higher at £19 10s. to £19 15s. per ton. Demand good.

SODIUM PRUSSIATE.—Firm at 4½d. per lb., with a fair market.

SODIUM SULPHIDE is unchanged.

ZINC SULPHATE.—A fair business is reported at £13 10s. to £14 per ton.

Coal Tar Products

There is little change to report in the values of coal tar products from last week, the market remaining quiet.

90's BENZOL is unchanged, at about 1s. 4d. to 1s. 5d. per gallon, on rails, while the motor quality is quoted at 1s. 1½d. to 1s. 2½d. per gallon.

PURE BENZOL is worth about 1s. 6½d. to 1s. 7d. per gallon, on rails.

CREOSOTE OIL is firm, and is quoted at about 7½d. per gallon, on rails, in the North, while the price in London is about 8½d. per gallon.

CRESYLIC ACID is unchanged, at about 2s. 2d. per gallon, ex works, for the pale quality, 77/99%, while the dark quality, 95/97%, is worth about 1s. 11d. per gallon.

SOLVENT NAPHTHA is quoted at about 10d. per gallon, on rails.

HEAVY NAPHTHA is unchanged, being worth about 11d. per gallon, on rails.

NAPHTHALENES are steady at about £6 15s. to £7 per ton for the 74/76 quality, and at about £8 to £8 15s. per ton for the 76/78 quality.

PITCH is in rather better demand. The value remains unchanged, at about 85s., f.o.b. U.K. ports.

Nitrogen Products

Export.—During the past week the sulphate market has been quieter, but prices have remained firm at £9 10s./£9 12s. 6d. per ton, f.o.b. U.K. port in single bags. Higher prices are quoted for forward positions. It is understood that consuming countries are well bought.

Home.—There is nothing to report in the home market.

Nitrate of Soda.—The cessation of large buying, especially on the part of the United States, has resulted in a quietening of the nitrate market. Prices, however, remain unchanged as reported in our last issue.

South Wales By-Products

THERE is no material change in South Wales by-product activities The inquiry for pitch is small and prices remain unchanged from 77s. 6d. to 82s. 6d. a ton. Crude naphthalene is quiet at £4 10s. to £5 per ton, while crude tar is steady, with a small demand, at 60s. to 65s. per ton. Refined tars are quiet, coke oven tar selling at 8¼d. to 9d. a gallon, and gasworks tar at 7d. to 7¾d. a gallon, f.o.r. maker's works, and 10d. to 1s. delivered in barrels. Solvent naphtha remains at 10d. to 1s. 0¼d. per gallon, f.o.r. maker's works, and has a small but steady demand. Patent fuel and coke exports continue to be good, while the home demand has also increased slightly. Patent fuel prices are steady at 22s. 6d. to 24s. 6d., while coke is unchanged.

Share Issues this Week

TARFROID, LTD., issued on Tuesday 150,000 10s. 8 per cent. cumulative participating preference and 150,000 1s. ordinary shares. This company has been formed with a capital of £100,000 to acquire Tarkold, Ltd., and to exploit the latter's British, foreign, and Dominion patent rights for the manufacture of products known under the registered trade names of "Tarfroid," "Tarkold," "Mac-Kold," and "Plycold." The board of directors includes Dr. J. A. Roelofsen, general manager of the chemical department of Dorman, Long and Co., Ltd. The issue was over-subscribed.

The Margarine Union, Ltd. (the British branch and the holding company formed to acquire control of the Anton Jurgen and Van den Bergh interests), offered for sale on Tuesday 1,000,000 £1 7 per cent. cumulative preferred shares at par and 100,000 £1 ordinary shares at 22s. The lists were closed on Tuesday morning. Messrs. Jacob Van den Bergh and Henry Van den Bergh have decided to resign their positions on the board of Van den Berghs, Ltd. Their resignation will take effect as from December 31, 1927, but they have agreed to continue to act after that date as honorary advisers to the board.

General Oil Conservancy: Compulsory Liquidation

THE statutory first meetings of creditors and shareholders under the compulsory liquidation of General Oil Conservancy, Ltd., Salisbury House, London Wall, E.C., were held in London on November 10. Mr. G. D. Pepys, Official Receiver, said that the company was formed in March, 1923, for the purpose of acquiring and exploiting an invention for separating oil from water. The issued capital amounted to £12,030. The company was the outcome of steps which Major-General Seeley and Sir Warden Chilcott had taken to make an effort to abate the nuisance of oil pollution in sea water, and they eventually agreed to adopt the apparatus introduced by Mr. H. M. Alexander. It was stated that successful demonstrations of the plant had been held at Birkenhead and also in the U.S.A., where negotiations for the sale of the American rights fell through.

An order for two plants was received from the Admiralty, but the tests imposed proved too severe. The company's failure was attributed to that cause and to the lack of commercial demand for the oil separator, in consequence of no international agreement regarding oil pollution of the seas having been effected. Liabilities amounted to £26,300, and assets to 4s. 9d. A total deficiency of £38,330 was disclosed with reference to the shareholders. As some difference of opinion arose with reference to the appointment of a liquidator, it was stated that the matter would be referred to the Court for decision.

JOHN J. GRIFFIN AND SONS, LTD., of Kemble Street, Kingsway, London, write to inform us that they market the "Alltest" portable moving coil instrument for D.C. tests, which was noted in one of our recent issues.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, November 16, 1927.

DURING the past week business in the heavy chemical market has shown moderate improvement, but inquiry is still rather slower than for some little time. There are no changes of any importance in prices to record.

Industrial Chemicals

ACETONE, B.G.S.—Quoted £59 to £62 per ton, ex store, according to quantity.

ACID ACETIC.—98/100%, glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80%, pure, £37 10s. per ton, ex wharf; 80%, technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £34 per ton; powder, £36 per ton in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Quoted 7½d. per lb., f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYTSALS.—In rather better demand and price now 1s. 6¾d. per lb., less 5%, ex wharf.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. 9d. per carboy. Dearsenicated quality, 6s. 3d. per carboy, ex works.

ACID NITRIC, 80%.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Rather brighter, but prices unchanged at about 3½d. per lb., ex wharf, for prompt shipment, or 3¾d. per lb., ex store, spot delivery.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—In little demand and price nominally 1s. 2¾d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material quoted £5 12s. 6d. per ton, ex store. On offer for early delivery at £5 5s. per ton, c.i.f. U.K. ports.

ALUM POTASH.—Lump quality quoted £8 5s. per ton, c.i.f. U.K. ports; crystal meal, 10s. per ton less. Lump quality on spot offered at £9 per ton, ex store.

AMMONIA, ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2¼d. to 3d. per lb. delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture unchanged at £23 to £24 per ton, ex station. Continental on offer at £19 15s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £17 10s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Now quoted £20 per ton, ex wharf, prompt dispatch from mines. Spot material available at £20 15s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—English material on offer at £7 5s. per ton, ex station. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £6 17s. 6d. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Contract price to consumers £8 per ton, ex station, minimum 4-ton lots. Spot material 10s. per ton extra. Continental on offer at £7 5s. per ton, ex wharf.

BORAX.—Granulated, £19 10s. per ton; crystals, £20 per ton; powder, £21 per ton, carriage paid U.K. ports.

CALCIUM CHLORIDE.—English manufacturer's price £5 to £5 5s. per ton, ex station, with a slight reduction for contracts. Continental rather cheaper at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Continental material quoted £23 per ton, c.i.f. U.K. ports. British on offer at £24 per ton, ex store.

FORMALDEHYDE, 40%.—On offer at £37 5s. per ton, c.i.f. U.K. ports. Spot material quoted £39 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at about £28 per ton, ex store.

LEAD, WHITE.—Quoted £28 10s. per ton, ex store.

LEAD ACETATE.—White crystals quoted £39 15s. per ton, c.i.f. U.K. ports; brown about £38 10s. per ton, c.i.f. U.K. ports. Spot material on offer at £42 15s. per ton, ex store, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH CAUSTIC, 88/92%.—Solid quality quoted £28 15s. per ton, c.i.f. U.K. ports, minimum 15-ton lots. Under 15-ton lots £29 10s. per ton. Liquid, £15 per ton, minimum 15-ton lots. Under 15-ton lots £15 7s. 6d. per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—Unchanged at 4¼d. per lb., delivered.

POTASSIUM CARBONATE.—96/98% quality now on offer at £25 10s. per ton, ex wharf. Spot material quoted £26 10s. per ton, ex store; 90/92% quality offered from the Continent at £24 per ton, ex wharf.

POTASSIUM CHLORATE, 99/100%.—On offer from the Continent at £25 10s. per ton, c.i.f. U.K. ports for powdered quality. Crystals, 30s. per ton extra.

POTASSIUM NITRATE.—Quoted £20 per ton, c.i.f. U.K. ports, spot material available at £21 per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6¼d. per lb., ex store, spot delivery.

POTASSIUM PRUSSIATE (YELLOW).—Unchanged at about 6¼d. per lb., ex store, spot delivery. Offered from the Continent at 6¾d. per lb., ex wharf.

SODA, CAUSTIC.—Powdered, 98/99%, £19 7s. 6d. per ton; 76/77%, £15 10s. per ton; 70/72%, £14 10s. per ton, carriage paid station, minimum 4-ton lots on contract. Spot material, 10s. per ton extra.

SODIUM ACETATE.—In good demand and still scarce for prompt delivery. Quoted £18 5s. per ton, c.i.f. U.K. ports. British material quoted £22 per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised quality £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

POTASSIUM BICHROMATE.—Quoted 3¾d. per lb., delivered buyers' works.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 27s. 6d. per ton extra; alkali, 58%, £8 10s. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 10s. per ton, ex store, minimum 4-ton lots. Continental on offer at about £8 2s. 6d. per ton, ex wharf, prompt shipment. Pea crystals of British manufacture quoted £15 5s. per ton, ex station, 4-ton lots.

SODIUM NITRITE, 100%.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIATE (YELLOW).—In moderate demand and price unchanged at about 4¾d. per lb., ex store. Offered for prompt shipment from the Continent at 4¼d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption £3 7s. 6d. per ton, ex works.

SODIUM SULPHIDE.—Prices for English material as follows:—60/62%, solid, £10 10s. per ton; broken, £11 10s. per ton; flake, £13 5s. per ton; crystals, 31/34%, £7 10s. per ton to £8 5s. per ton, according to quality, delivered your works, minimum 4-ton lots on contract. Prices for spot delivery 5s. per ton higher for solid, 2s. 6d. per ton for crystals. Offered from the Continent at about £9 5s. per ton, c.i.f. U.K. ports; broken, 15s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; floristella, £9 10s. per ton; ground American, £9 5s. per ton, ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material quoted £11 15s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coke Oven Industry and Synthetic Ammonia

MR. J. CURRY, the new chairman of the Northern Section of the Coke Oven Managers' Association, gave his chairman's address at Durham on Saturday, November 12. He drew attention to the sulphate of ammonia situation. The market for that product had recently been below the pre-war figure, and the further development of synthetic ammonia plants would have a further effect upon the market. Synthetic ammonia production as allied to the coke oven industry was a development for future consideration. Tar distillation plants attached to coke oven plants had been erected at many works during recent years, and a great deal had been done to bring tar distillation to perfection, but they could not afford to rest on their oars. America had been a big customer for creosote oil, and last year imported 95 million gallons. Up to the present time America had used all the tar she had made as a fuel, but she was now building tar distillation plants of her own, which policy was bound to react on the market. He suggested that too much time could not be spent on research work so that they might be able to find other outlets for tar products if the necessity arose.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, November 17, 1927.

Inquiry for chemical products on the Manchester market during the past week has continued on a moderately active scale, and there is growing interest among contract consumers regarding 1928 commitments. Actual business just now is largely a question of comparatively small parcels, so far as home trade buyers are concerned, although in the aggregate these probably amount to a fair total. Export demand on this centre continues rather quiet.

Heavy Chemicals

With regard to sulphide of sodium there is still only a relatively slow trade being done, and after a somewhat steadier tone during the last few weeks there has been a renewal of the weakness previously in evidence; from £8 5s. to £8 10s. per ton is now being quoted for the commercial quality, with the 60–65 per cent. concentrated solid on offer at £9 15s. per ton. A quiet business is reported in the case of phosphate of soda, but at £12 15s. per ton, prices are about unchanged. Glauber salts and saltcake are in moderate request at about £3 5s. and £3 10s. per ton respectively. Caustic soda is firm and continues to attract a fair amount of attention from buyers at from £14 10s. to £16 10s. per ton, according to quality. Alkali also is well maintained at about £6 15s. per ton, and a moderate trade in this material is being put through. Although quiet and with an easy tendency as regards prices, hypo-sulphite of soda is still being quoted here at round £9 10s. per ton for the commercial quality and £16 5s. for the photographic. Bicarbonate of soda remains steady at about £10 10s. per ton, with sales at about their recent level. Prussiate of soda is on the quiet side, but offers of this material are still in the neighbourhood of 4¼d. per lb. Nitrite of soda meets with some inquiry and quotations are held at from £19 to £19 2s. 6d. per ton. Bichromate of soda is in fair demand with current offers at round 3d. per lb. Chlorate of soda is on the quiet side, but values are steady at about 2¾d. per lb.

There is not a great deal of actual change in the position of the potash group. Inquiry for permanganate is of limited extent and prices are on the easy side at 6¼d. per lb. for B.P. and 5¼d. for commercial. Bichromate of potash is in quietly steady demand, and offers still range at from 4¼d. to 4⅜d. per lb. Chlorate of potash is on the slow side, but values are held at from 2¾d. to 3d. per lb. Yellow prussiate of potash is quoted at round 6¼d. per lb., but without attracting any important weight of business. Caustic potash is in quietly steady demand at from £29 10s. to £31 per ton, and carbonate of potash also is in fair request at £26 10s. per ton.

The demand for arsenic just now is only on moderate lines, and there is a somewhat easier feeling, to-day's quotations ranging from £17 15s. to £18 per ton at the mines for white powdered, Cornish makes. Copper sulphate meets with some inquiry, and offers are now down to about £24 5s. per ton, f.o.b. The acetates of lime continue firm on comparative scarcity, grey being quoted at £16 10s. per ton and brown at £10 10s. In the case of the acetates of lead inquiry is slow and values are easy at £40 per ton for white and about £38 15s. for brown. Nitrate of lead, however, is practically unchanged at £38 per ton, but buying interest is subdued.

Acids and Tar Products

Tartaric acid is in limited request, and cheaper offers of this material are about, down to 1s. 2¼d. per lb. being quoted here this week. Citric acid, however, keeps fairly steady at 1s. 6¼d. per lb., although there is only a quiet business being done. Oxalic acid is in moderate demand, and prices are held at round 3½d. per lb. Acetic acid is firm and in fair inquiry at £67 per ton for glacial and £37 for 80 per cent. commercial.

Among the by-products pitch occupies a fairly strong position, current f.o.b. prices ranging from £4 5s. to £4 7s. 6d. per ton. Solvent naphtha is still rather quiet at about 11¼d. per gallon. Creosote oil keeps firm and is attracting a fair amount of attention at 7¾d. to 8d. per gallon. Carbolic acid is easier at 7⅝d. per lb. for crystals and round 2s. 5d. per gallon for crude material.

The Variation of Contract Prices

An Appeal Dismissed

On Monday, in the Court of Appeal, the Master of the Rolls, and Lords Justices Sargant and Lawrence, had before them an appeal by Mr. Morris Freedman, trading as Economical Bazaars, at Rye Lane, Peckham, from a judgment of Mr. Justice Astbury, sitting in the Chancery Division, granting the Palmolive Co. of England, Ltd., an injunction to restrain the defendant from breaking a price maintenance agreement which had been entered into with the plaintiffs not to sell Palmolive soap under 6d. a tablet. The defendant carried on business at a wholesale warehouse, and at a number of retail branch shops, and he purchased from the plaintiffs, on August 24, 1926, twelve gross of Palmolive soap, and signed an agreement in the form usually required by the plaintiffs that he would not sell their soap to retailers and customers below the price specified in the agreement. The plaintiffs discovered that the defendant was selling the soap at 5d.

The defendant claimed that he was not bound by the agreement, and said that he did not propose to abide by it, because if he did he would be guilty of profiteering. He said that the profits he would make would be so exorbitant that it would amount to robbing the public. He later challenged the plaintiffs to bring an action. The plaintiffs issued a writ and moved for an injunction. The defendant submitted that the agreement was one in restraint of trade, contrary to public policy, and illegal.

The Court, by a majority, dismissed the appeal, Lord Justice Sargant dissenting.

The Master of the Rolls, in his judgment, said the real question was whether the agreement was valid and enforceable. Agreements to maintain prices had been upheld in a number of cases, Lord Parker saying in a case before the House of Lords that their lordships knew of no case in which a restraint, reasonable in the interest of the parties, had been held unenforceable because it involved some injury to the public. It was clear from the decisions that a contract involving restraint of trade and, in particular, the maintenance of prices, was not necessarily bad. Only slight evidence was needed to justify an agreement to maintain prices, the Court regarding the parties as the best judges of what was reasonable between themselves. The real question was whether the scope and terms of the present agreement were reasonable and whether the appellant had justified his changed attitude. He was unable to find that the contract was unreasonable and the appeal must be dismissed with costs.

Lord Justice Lawrence concurred. Lord Justice Sargant dissented. He said the terms of the contract devised by the respondents went, in his (his Lordship's) opinion, far beyond what was required for their reasonable protection, and imposed unreasonable obligations on the appellant particularly as regarded duration.

River Pollution: Advisory Committee Appointed

The Minister of Health and the Minister of Agriculture and Fisheries have appointed a joint advisory committee, with Sir Horace Monro as chairman, to consider, and from time to time to report, on the position with regard to the pollution of rivers and streams, and on any legislative, administrative, or other measures which appear to them to be desirable for reducing such pollution. The membership of the committee is as follows:—Sir Horace C. Munro (chairman); Mr. A. R. Atkey; Rear-Admiral T. Beamish, R.N., M.P.; Mr. R. Beddington; Mr. H. E. Brooks; Mr. J. T. Conroy; Mr. S. Easten; Mr. C. N. Hooper; Mr. F. E. W. Howell; Mr. L. H. Lewis; Mr. W. Prescott; Lieut.-Col. D. Watts Morgan, M.P.; Mr. H. M. Wilson. The secretaries to the committee are Mr. G. C. North, of the Ministry of Health, and Mr. H. Meadows, of the Ministry of Agriculture and Fisheries. All communications should be addressed to Mr. North, at the Offices of the Ministry of Health, Whitehall, London, S.W.1. The Committee will deal in an advisory capacity with new legislation, set up new river boards, induce responsible local bodies to co-operate with each other, and devise machinery for dealing scientifically with the problem.

Company News

ILFORD, LTD.—A dividend of 12½ per cent. on the ordinary share capital is recommended for the year ended October 31 last, less income tax at 4s. in the £.

COMMONWEALTH OIL REFINERIES.—It was announced in the Senate on November 11, that the net profit on the Commonwealth Oil Refineries amounted to £69,000.

DORMAN, LONG AND CO.—It is announced that the dividend on the 6 per cent. cumulative preference shares for the half year ended September 30, 1927, will be paid on December 31.

PARKES CHEMISTS.—The payment on November 30, is announced of an interim dividend on the ordinary shares for the half-year ended August 31 last, at the rate of 2½ per cent., less income tax.

BROKEN HILL PROPRIETARY BLOCK 14.—The half-yearly meeting of shareholders is to be held in Melbourne on November 28. The operations for the six months ended September 30 last have, it is reported, resulted in a loss of £3,331.

SOUTH DURHAM STEEL AND IRON CO., LTD.—The directors have decided to recommend a dividend of 1s. per share (5 per cent.) on the ordinary shares for the year ended September 30, 1927, payable after confirmation at the shareholders' meeting, to be held on December 14.

INTERNATIONAL HOLDINGS AND INVESTMENT CO.—An extraordinary general meeting of shareholders will be held at Winchester House, Old Broad Street, London, on November 24, at 11 a.m., to consider an extraordinary resolution that the company be wound up voluntarily.

EASTMAN KODAK OF NEW JERSEY.—The directors have declared the following dividends, payable on January 2, 1928: Regular dividend of 1½ per cent. on the preferred stock, regular dividend of $1.25 per share on the common stock, and an extra dividend of $0.75 per share on common stock.

WALL PAPER MANUFACTURERS.—Profits for the year to August 31st last amounted to £639,783, after providing for depreciation. After placing £125,000 to reserve, making that fund £875,000 the carry forward, after meeting increased taxation, is £305,234, compared with £305,010 brought in.

CHINESE ENGINEERING AND MINING CO.—The directors recommend the payment of a balance dividend of 10 per cent., free of income tax (making a total dividend of 15 per cent., free of income tax), in respect of the year ended June 30, 1927. Last year the final dividend was 5 per cent., tax free, making a total distribution of 10 per cent., tax free.

BRITISH COTTON AND WOOL DYERS' ASSOCIATION.—The gross profit for the half-year ended September 30 last amounts to £81,097. After deducting debenture interest, depreciation, etc., the net figure is £55,586, as compared with £11,500 for the corresponding period of last year. There was brought forward £25,175, giving a total credit balance on profit and loss account of £80,762.

PAN DE AZUCAR NITRATE CO.—The report for the year ended June 30, 1927, states that trading profit, interest and transfer fees amount to £14,810, from which have to be deducted income tax, London expenses, and other charges, £4,484, leaving a net profit of £10,326, to which is added balance brought forward of £17,268, making £27,593. The board recommend payment of a final dividend of 10 per cent., less income tax, making 15 per cent. for the year, carrying forward £14,393. No nitrate was manufactured at company's oficina during period under review, and profit shown in accounts was derived from the sale of nitrate stocks brought forward from preceding year. Extensive alterations and additions to plant and machinery are being carried out with a view to reducing cost of production, which, it is stated, will somewhat delay reopening of oficina.

ANGLO-CONTINENTAL GUANO WORKS, LTD.—For the year to June 30 last, the report states that the profit amounts to £29,504, as compared with £30,613 in the preceding year. After meeting debenture interest, £10,442, the directors propose writing off balance of debenture issue expenses, £8,819, placing to depreciation reserve £5,000, to general reserve £5,653, allotting £2,250 to sinking fund for debenture stock, carrying forward £2,090. The annual meeting will be held at Cannon Street Hotel, London, on November 22, at 2 p.m., which will be followed by an extraordinary meeting for the purpose of submitting a scheme for capital reconstruction. In a circular accompanying the report, it is stated that the last dividend paid on the 7½ per cent. cumulative preference shares was for the period to December 31, 1923, and to meet these four years' (nearly) arrears, amounting to £72,000 after charging income-tax, the directors propose to issue to preference shareholders £75,000 fully-paid preference shares ranking *pari passu* with the existing preference shares. Further, the issued ordinary capital, amounting to £400,000, is to be halved, the shareholders to be asked to agree to the reduction by 50 per cent. in the nominal value of their shares.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Mark can be lodged up to November 26, 1927.

WINDMILL

482,045. Class 4. Raw, or partly prepared, vegetable, animal, and mineral substances used in manufactures, but not including maize, starch, stearine, oleine, glycerine, or pitch, and not including any goods of a like kind to any of these excluded goods. Synthetic Ammonia and Nitrates, Ltd., The Chemical Works, Billingham, Stockton-on-Tees, Durham; chemical manufacturers. June 30, 1927. (To be Associated. Sect. 24.)

Opposition to the Registration of the following Trade Mark can be lodged up to December 2, 1927.

ABRALAC.

482,409. Class 1. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. A. Boake, Roberts and Co., Ltd., 100, Carpenters Road, Stratford, London, E.15; manufacturing chemists. July 14, 1927. (To be Associated. Sect. 24.)

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

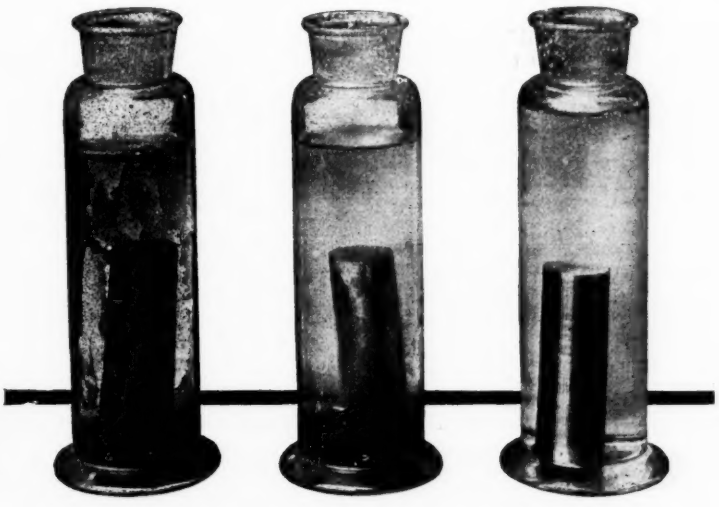
POWDERED GRAPHITE AND MANGANESE DIOXIDE.—The Direction of Posts, Telegraphs, and Telephones in Constantinople is calling for tenders to be presented by December 10, 1927, for the supply of 9,000 kilos. of fine powdered graphite and 6,000 kilos. of dioxide of manganese. (Reference B.X. 3,989.)

ANILINE DYES.—An Indian firm of merchants and dealers established in Amritsar, are desirous of securing the representation of British manufacturers of aniline dyes for Delhi, Amritsar and Multan. (Reference No. 410.)

CHEMICALS, ETC.—A manufacturers' agent in Trinidad who has had considerable experience in the sale of drugs and chemicals desires to obtain the representation of manufacturers of drugs, chemicals, proprietary medicines, etc., on a commission basis. (Reference No. 411.)

AGENT'S SERVICES OFFERED.—A commission agent established in Durazzo (Albania) desires to obtain the representation of British manufacturers or exporters of caustic soda and silicate of soda for soap-making; pharmaceutical products, especially quinine. (Reference No. 413.)

VARIOUS GOODS.—The Director of Government Medical Supplies at The Hague is inviting tenders, on behalf of the Dutch Department of War and the Ministry of Colonies, for the supply of medicinal preparations for the year 1928. The contract includes acetone, acetic, boric, sulphuric and other acids, liquid ammonia, Peruvian balsam, glycerine, gum arabic, seed oils, etc. Tenders should be made through local agents, and should reach the Director of the Government Medical Supply Stores, Amsterdam, by December 1, 1927. A copy of the general conditions of tender and complete schedule of requirements in Dutch is available for inspection (Reference B. 3,977.)



The illustration shows the marked superiority of Firth Staybrite (right) over mild steel (left) and stainless steel (centre) after immersion in sea-water for over 2 years.

FIRTH STAYBRITE

when in its correctly Heat-treated condition has such a wide range of resistance to the attacks of acids & corrosive media that in this respect it is

SECOND ONLY TO

GOLD AND PLATINUM

PLANT and vessels made from Firth Staybrite possess remarkable qualities of resistance to corrosive influences even after the various fabricating operations. Final application of the recommended heat treatment (cooling in air or water from 1,100° or 1,200° Centigrade) will, however, considerably enhance their qualities of resistance to a still wider range of chemicals. Full technical information on the subject of final heat treatment will gladly be tendered upon request.

Write for Booklet 31 on this subject, which tells you more about this remarkable steel.

THOS. FIRTH & SONS, LTD.

SHEFFIELD

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

CROCKATT (JOHN), LTD., Leeds, dyers and cleaners. (M., 19/11/27.) Registered October 29, £900 and any further advances mortgage to Building Society; charged on 11, Woodlands Arcade, Duckworth Lane, Bradford. *£11,463. February 9, 1927.

GILMONT PRODUCTS, LTD., London, E.C., manufacturers of dental cream, etc. (M., 19/11/27.) Registered October 28, £25,000 debentures (filed under sec. 93 (3) of the Companies (Consolidation) Act 1908), present issues £6,000, £2,300, and £2,500; general charge.

HARDING CHEMICAL CO., LTD., Manchester. (M., 19/11/27.) Registered November 5, £300 debentures, part of £2,000; general charge. *£1,400. December 1, 1926.

RYAN AND CO. (BOLTON), LTD., patent medicine manufacturers. (M., 19/11/27.) Registered November 3, £300 debenture, to R. Urmston, Oakwood, Lostock, Bolton, merchant; general charge.

VICTORIA OIL AND REFINING CO., LTD., London, N.W. (M., 19/11/27.) Registered November 2, £5,000 debenture to H. J. Peers, c/o Lloyds Bank, Ltd., 222, Strand, W.C.; general charge. *Nil. December 8, 1926.

Satisfaction

LYNN MANUFACTURING CO., LTD., London, E.C., chemists. (M.S., 19/11/27.) Satisfaction registered October 27, £625, registered October 11, 1927.

London Gazette, &c.

Companies Winding Up Voluntarily

KENT CHEMICAL CO., LTD. (C.W.U.V., 19/11/27.) R. S. Andrews, chartered accountant, 448, Strand, London W.C.2, appointed as liquidator, November 7. Meeting of creditors at the offices of Hackett, Radley and Johnson, chartered accountants, 448, Strand, London, W.C.2, on Wednesday, November 23, at 12 noon. Creditors' claim by January 10.

NEOCELLON, LTD. (C.W.U.V., 19/11/27.) R. J. Blackadder, Norfolk House, Norfolk Street, Strand, London, appointed as liquidator, November 4.

New Companies Registered

BRYNITE, LTD., Dominion House, Bartholomew Close, E.C.1. Registered November 11. Nom. capital, £2,000 in 5s. shares. To acquire from P. M. Short, the benefit of trade mark in respect of a preserving preparation described as "Brynite" together with the goodwill of the business connected with the manufacture and sale of goods bearing that trade mark, and to carry on the business of manufacturing, wholesale, retail and dispensing chemists, druggists, analysts and drysalters, etc.

MY LADY DYES, LTD., 51, Smith Street, Whiteinch, Glasgow. Registered in Edinburgh, November 10. Nom. capital, £2,500 in £1 shares. To carry on the business of merchants and brokers of and wholesale and retail dealers in all kinds of dyestuffs, chemicals, drugs, cements, varnishes, etc. Directors: A. C. Lang, J. Sharp, and J. M. Houston.

NUERA PRODUCTS, LTD., Marfleet, Hull. Registered as a "private" company on November 10. Nom. capital, £2,500 in £1 shares. To acquire the formulæ of a soaking or washing medium known as "Burnus" and all rights connected therewith; to manufacture and sell "Burnus" and its allied products, and to carry on the business of makers, sellers and distributors of and dealers in washing powders, soap, oils, greases, and other articles or substances for washing or cleansing purposes, edible greases, fats and stearine, oleine, glycerine, insecticides, and toilet and other preparations, etc.

TARFROID, LTD. Registered as a "public" company on November 4. Nom. capital, £100,000 in 170,000 preference shares of 10s. each and 300,000 ordinary shares of 1s. each. The objects are to acquire the business and assets of Tarkold, Ltd. (including the trade mark "Tarfroid, No. 467,428, and "Tarfroid," No. 471,358), to adopt an agreement with the National Mercantile Trust, Ltd., and James Mason and Son, Ltd., to exercise the option the benefit whereof is assigned to the company by such agreement, to manufacture, refine, sell, import, export and deal in tar, pitch, casein, soap, soda, resin, naphtha and all kinds of oils, oleaginous and saponaceous substances and substitutes; to deal in all residuals and by-products obtained from coal and coke, etc. A subscriber: G. W. Waspe, 325, Hertford Road, Waltham Cross.

THE INDUSTRIAL SILK MILLS, LTD., Old Industrial School, Brook Street, Macclesfield. Registered as a "private" company on November 9. Nom. capital, £1,000 in £1 shares. Manufacturers, spinners, doublers, combers, winders, beamers, and merchants of artificial filaments and yarns, silk, cotton, linen, wool, and worsted and other yarns, bleachers and dyers, makers of vitriol, bleaching, and dyeing materials, dealers in textile, filamentous, fibrous, viscose, or other filaments; chemists, drysalters, etc. Directors: H. Wilson and E. R. Jones.

WILLIAM THEW, LTD. Registered November 9. Nom. capital, £1,000 in £1 shares. Manufacturers, refiners and bleachers of and dealers in shellac, oils, transparents, gums, glues, and all kinds of drysalteries, skins, and all kinds of produce, etc. A subscriber: A. Wilson, 62, Myddelton Square, London, E.C.

YAVAN, LTD., Chesham House, 136, Regent Street, W. Registered November 14. Nom. capital, £15,000 in £1 shares. To acquire certain patents for inventions and rights to inventions and processes relating to the manufacture of adhesive gums or other substances, and in particular the trade mark "Yavan," to adopt an agreement with Yava Works, Ltd., and/or Dr. R. Arnot, and to carry on business as chemists, druggists, manufacturers of and dealers in chemical, industrial, and other preparations, pigments, varnishes, adhesive substances, etc. Directors: Sir Herbert E. Blain, J. B. White, J. S. Oliver, Dr. R. Arnot.

YEASTPIRIN, LTD. Registered November 12. Nom. capital, £6,500 in 53,000 5 per cent. preference shares of 2s. each and 24,000 ordinary shares of 1s. each. To acquire the sole right to use the name of "Yeastpirin" as a trade mark in connection with foods, medicines and medical preparations, and to carry on the business of pharmaceutical, manufacturing and general chemists and druggists, etc. A subscriber: S. Cronin, 31/4, Basinghall Street, London, E.C.2.

Benn Brothers' Other Journals

THE CABINET MAKER.—Furniture Shipments in October; Progress in Motor Transport; The Association of Master Blind Makers' Dinner.

THE ELECTRICIAN.—"Valve Amplifiers for Submarine Cables," by A. M. Curtis; Higher Steam Pressures; Lighting Service; The Commercial Transport Exhibition.

THE FRUIT GROWER.—The Colour Value in Apples; "Motor Transport for Fruit," by H. W. Scott-Hall; Merchandise Marks Problems.

GARDENING ILLUSTRATED.—Perennial Lobelias; How to Start a Herbaceous Border; Delphiniums; Colour Schemes for Herbaceous Borders; Michaelmas Daisies.

THE GAS WORLD.—Meeting of the Society of the British Gas Industries: Mr. R. B. Hodgson on "The Romance of the Gasholder"; "The Partial Drying of Town's Gas," by Mr. C. Harris; Mr. S. Hay on "Horizontal Settings, with Special Reference to Silica Retorts."

THE HARDWARE TRADE JOURNAL.—The Domestic Smoke Problem; Facts about Saws; Hardware Imports and Exports; Novelties in the Radio Trade.

THE TIMBER TRADES JOURNAL.—The Commercial Motor Show; Some of the Exhibits; Warranties in the Contract of Sale; Four-side Planer.